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FRANKLIN, OHIO'S SOLID WASTE DISPOSAL AND FIBER RECOVERY DEMONSTRATION PLANT

VOLUME II

A. M. KINNEY, INCORPORATED

PREPARED FOR
ENVIRONMENTAL PROTECTION AGENCY

1974

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The Franklin, Ohio, resource recovery demonstration project has elicited widespread interest. This report was prepared to: (1) present a preliminary analysis of the solid waste disposal and fiber recovery portions of the project; (2) provide preliminary data by which others may be guided in evaluating emerging solid waste disposal and resource recovery technologies. The historical development of this EPA-sponsored project and a general description and evaluation of the process used are included. The preliminary plant economics presented are based on construction costs and the first 12 months of operation. The plant began functioning in June 1971 and is now in regular operation recovering ferrous metals and paper fibers which are sold to local industries.

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17b. Identifiers/Open-Ended Terms

*Solid waste disposal, *Resource recovery, Fluid bed incinerator, Solid waste separation technology, Liquid cyclone separator, Paper fiber recovery system, Sewage sludge disposal, Franklin (Ohio)

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FRANKLIN, OHIO'S

SOLID WASTE DISPOSAL AND FIBER RECOVERY DEMONSTRATION PLANT

Final Report

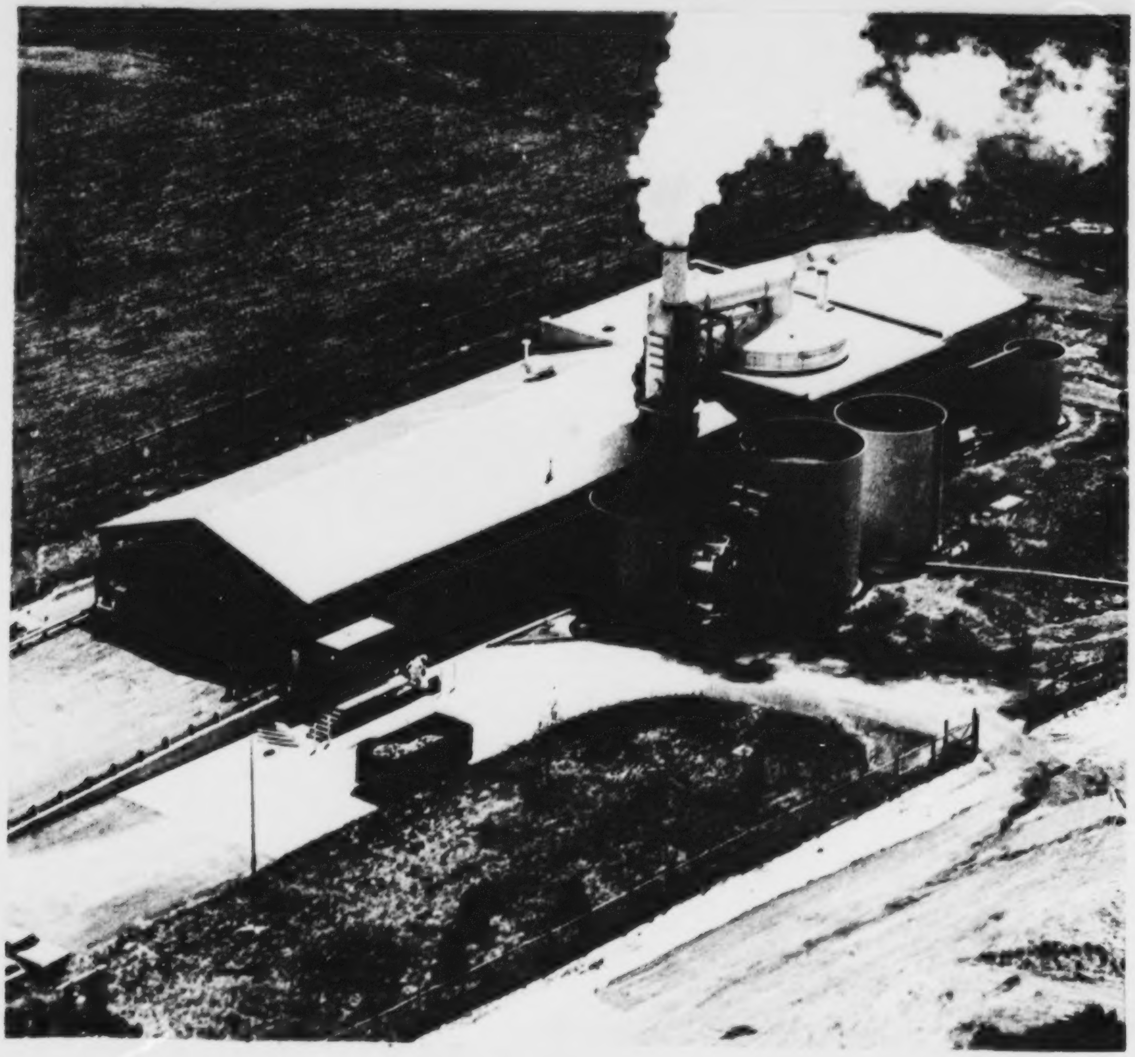
VOLUME II

This report (SW-47d.2) was prepared
for the City of Franklin, Ohio, under demonstration grant No. G06-EC-00194
from the Office of Solid Waste Management Programs
by N. THOMAS NEFF and N. WAYNE OKEL
A. M. Kinney, Inc., Consulting Engineers, Cincinnati, Ohio
A summary report (SW-47d.3) on this project is being published
by the U.S. Government Printing Office

U.S. ENVIRONMENTAL PROTECTION AGENCY
1974

This report has been reviewed by the U.S. Environmental Protection Agency and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does mention of commercial products constitute endorsement or recommendation for use by the U.S. Government.

An environmental protection publication in the solid waste management series (SW-47d.2)



FOREWORD

The initial objective of this project, started in 1968, was to demonstrate an innovative solid waste disposal technique utilizing wet grinding and subsequent incineration. Later the scope of the project was expanded to recycle portions of the solid waste stream. The facility located in Franklin, Ohio, and designed and operated by the Black Clawson Co., presently includes the capability to separate reusable paper fibers and ferrous metals for recycling prior to disposing of the remaining solid wastes. Further construction has recently been completed which has added to the plant the capability to recover color-sorted glass and aluminum. This pilot plant represents one of the first successful resource recovery facilities in the country.

In addition to disposing of all the municipal solid wastes generated in Franklin, Ohio, the plant also incinerates sludge from a nearby sewage treatment plant. This project represents a significant advance in the state of the art of resource recovery and residuals management. This small system is a completely unique environmental control complex which has been toured by visitors from many parts of the world.

This report is based on data collected during the first 12 months of plant operation, i.e., June 1971 through May 1972. As such, much of the information and conclusions presented herein are outdated. Nevertheless, this report, in two volumes, does present much data which may be of interest to people in the solid waste management and resource recovery fields. Hence the report was prepared for publication.

The plant has continued to run on a regular basis since May 1972, and a more rigorous and comprehensive evaluation program is now underway. The current evaluation is being conducted under a separate EPA contract with the Systems Technology Corporation (Systech) of Dayton, Ohio. Their report should be available in early 1975. We wish to acknowledge the contribution made by David G. Arella, who served as the government's officer on this project from December 1971 to August 1974.

ARSEN J. DARNAY
Deputy Assistant Administrator
for Solid Waste Management

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ABSTRACT

Title: System for total refuse disposal by fluid mechanical separation of solid wastes and fluid bed oxidation of combustibles, and reclamation of paper fibers.

Grantee: City of Franklin, Ohio
35 East Fourth Street
Franklin, Ohio 45005

Project Director: Bernard F. Eichholz, City Manager

Project Started: Sep. 24, 1968

Project Ended: Feb. 28, 1973

Project Objectives: To design, construct, operate, and evaluate a demonstration plant for disposal of municipal solid waste and for the recovery of metals, glass, and paper fibers therefrom.

The system was designed to receive virtually unsorted municipal solid waste and to separate it by using a fluid-mechanical process. Reusable paper fibers, metals, and noncombustibles are separated in the process, and the remaining combustible solids are mixed with sewage sludge from an adjoining sewage treatment plant, and then burned in a fluid bed incinerator.

Results of Project: The plant is in daily commercial operation as the principal solid waste disposal facility for the City of Franklin and adjacent areas. The technical capability of the Wet Processing and Disposal system has been successfully demonstrated. The Fiber Recovery system initially produced yields of paper fiber lower than anticipated, but has undergone further developmental work to increase yield.

Actual operating costs during the term covered by this report are higher than originally anticipated due to low usage (40 tons per day) and due to

inflation. However, sufficient data and operating experience have been obtained to permit cost projections for plants of larger capacities, which indicate lower operating costs.

Summaries, tables and graphs are included to present actual construction and operating costs, as well as influent and effluent operational data.

This report was submitted in fulfillment of Project No. G06-EC-00194 under the partial sponsorship of the Office of Solid Waste Management Programs, Environmental Protection Agency.

SECTION V - UNIT OPERATIONS ANALYSIS

The following specifications and data sheets outline the process equipment installed in the Hydrasposal system (Solid Waste Disposal Plant) and the Fibreclaim (Fiber Recovery Plant). Where process changes have been made during the demonstration period, these specifications and data sheets have been updated, insofar as possible, to reflect as-built conditions. The specifications have been excerpted from A. M. Kinney, Inc., Specification No. 01890-01, used to obtain bids for the process equipment and which formed the basis for the contract under which the process equipment was furnished.

Specifications for certain items of nonprocess equipment furnished by the construction Contractors are included in the appropriate groupings.

Where MCD is mentioned it refers to Miami Conservancy District.

A. GENERAL EQUIPMENT REQUIREMENTS

1. Electrical Work

a. Motors. Motors 1/2 horsepower and larger, are 230/460 volt, 3-phase, 60 Hz, dripproof, squirrel cage induction type, with Class A or Class B insulation, except that agitator drive motors are totally enclosed and weather protected (fan cooled or nonventilated). Motors 1/3 horsepower and smaller, are 115 volt, single phase, split phase, or capacitor start induction type synchronous speed not in excess of 1,800 rpm.

All motors are designed for across-the-line starting with low starting current. Motors rated 100 horsepower and larger are equipped with thermal protection against dangerous overheating due to overload, and stalled rotor, with integral or separate device having contact capacity to operate directly in holding coil circuit of motor starter. All motors are provided with terminal housing of metal and of substantial construction, sized and provided for conduit entrance indicated.

Motor for each item of equipment is of the make customarily furnished for the intended service by the equipment manufacturer, with grease-lubricated ball bearings of a type suitable for periodic renewal of lubricant.

Motors conform to latest standards of ANSI, IEEE, and NEMA for design, ratings, performance characteristics, service factor, and tests. Each motor will carry continuously the maximum possible load developed by the driver's machine without exceeding the temperature rise specified by NEMA for the insulation classification, and have a nameplate power rating not less than the brake horsepower requirement of the driven load under any design condition. Except for the feed conveyor equipment No. 120, motor starters were furnished under other specifications.

b. Controls. Electrical control devices are suitable for use on 120 volt, single phase, ac circuits.

B. SOLID WASTE DISPOSAL PLANT EQUIPMENT

1. Scope

This section of the specification called for delivery, fob jobsite, of all equipment and materials and all work necessary for the design, manufacture and delivery of equipment, motors and accessories. The work included:

Hydrapulper, with lubrication pump
Junk remover
Hydrapulper dump pump
Hydrapulper feed conveyor
Liquid cyclone
Surge chest agitator
Surge chest pump
Thickener
High density press
Press screw feed conveyor
White water chest agitator
White water chest pump
Sludge storage chest agitator
Sludge storage chest pump
Scrubber discharge pump
Sewage sump pump
Fluid bed reactor
Reactor pneumatic conveyor
Fluidizing air blower
Venturi gas scrubber lining and insulation
Gas cooler
Ash pump
Reactor preheat oil burners and blower
Fuel bed oil injection nozzles
Reactor fuel oil pumps
Interconnecting breeching and stack
Controls and instruments including prewired and piped solid waste and reactor control panels
Refractory lining in reactor and breeching, including installation
Motors and drives
Supervision of field erection, initial operation, and testing of equipment furnished hereunder
Furnish, field erect and paint, surge, white water and sludge chests
Scrap metal magnet separator

2. Work Under Other Contracts

Separate contracts were awarded by the Owner for the following related work:

- Erection of all equipment herein specified except: refractory and corrosion-resistant linings in reactor, breeching and scrubber and the surge, white water and sludge chests
- Equipment and chests foundations
- Interconnecting piping
- Fuel oil supply tank
- Purchase of flowmeters for sewage sludge, white water and process water
- Air compressors
- Jib crane
- Truck scales
- Conveyor and truck scale pit sump pumps
- Propane gas bottles with regulator
- Antifreeze compressed air distributors in outside tanks
- Electrical wiring external to control panel
- Interlocks on equipment supplying material to the reactor pneumatic conveyor

3. Special Requirements

Design and fabrication of structural steel conforms to the latest specifications of the American Institute of Steel Construction and the Code of Standard Practice.

Combustion equipment including burners and controls conform to FIA standards.

Design conforms with all applicable laws, codes and ordinances of the City of Franklin, State of Ohio and Federal Air Pollution Control laws.

4. Capacity and Performance Requirements

System is designed to process (by a wet process) municipal solid waste at the rate of 150 tons (as-received basis) per 24 hours, and sewage sludge at the rate of 7.5 tons (dry solids basis) per 24 hours. Inorganic materials such as tin cans and glass bottles are separated, and the residual organic material, containing approximately 85 percent volatiles, burned in a fluid bed reactor.

Solids content of cake at outlet of high density press: 40 percent, minimum.

Reactor designed for 40 percent excess air.

Burn pulped refuse and sewage sludge at the rate of 132 pounds per minute (dry basis) without auxiliary fuel except during startup.

Analysis of pumped refuse and sewage sludge:

Solids content	40 percent
Volatile solids	85 percent
Heat content	8,800 Btu per pound of volatile solids

Combustion rate 425 pounds of dry solids per day per square foot of freeboard area.

Stack gases at scrubber outlet free from odors.

Particulate matter does not exceed 0.1 grain per standard cubic foot corrected to 12 percent carbon dioxide.

5. Weighing and Receiving

a. Truck Scale.

(1) General. One truck scale, Toledo Model 2781 MG, furnished and installed by General Construction Contractor.

Scale is of the concrete platform type with parallel link suspension members, designed for a maximum capacity of 52 tons with a scale platform 10 feet wide by 45 feet long, in accordance with Handbook 44, Federal Specifications and Regulations on Scales.

Scale package included lever system, scale head, and all weighbridge structural steel, pit coping angles, bumpers, foundation bolts and manhole cover plate.

(2) Accessories. Accessories included the following:

Autorange - automatic control of unit weights
Model 410 Printweigh prints weight simultaneously on inserted tickets and on a roll strip contained with the Printweigh housing
Printweigh housing is key locked
Manual set date mechanism
Informaplate, permitting up to 44 characters or spaces for identification
Scale equipped with two head heaters, each 60 watts, 120 volts ac
Unit is provided with necessary extension levers for installation as indicated
Manufacturer's mechanics supervised installation and calibration of the scale

b. Front End Loader.

(1) General. The front end loader was originally specified for the project as follows:

Gasoline-fueled, internal combustion engine-driven, four wheel drive, rubber pneumatic-tired compact type front-end loader, similar and equal to Bobcat M-600 unit as manufactured by Melroe Division of Clark Equipment Company, with load rating capacity of at least 1,000 pounds and equipped with an approximately 13 cubic foot utility bucket fitted with an hydraulically operated grapple having a minimum of five hardened steel tines. This unit was purchased separately by the City.

Initial operation of the plant showed that this unit did not have sufficient capacity to keep the feed conveyor fully charged and was subject to excessive fire wear. The Portman Equipment Company, suppliers of the unit, offered to refund the full purchase price of the Model M-600 in exchange for a Model 970, equipped with a 1-1/8 cubic yard utility bucket and powered by an 85 hp diesel engine. The additional cost of this replacement was $10,950; however, it was of a design and capacity also suitable for use by the City as a replacement for the bulldozer previously used in the landfill operation.

c. Feed Conveyor, Equipment No. 120.

(1) General. Unit manufactured by Webster Manufacturing Company was furnished as part of the process equipment package.

Purpose. Feed refuse from a storage area to the Hydrapulper.

Capacity and Size. Seven tons per hour plus 25 percent surge, pan width, 60 inches.

Type and Arrangement. Apron type, arranged for installation in the space provided, and to suit the low clearance over the Hydrapulper.

(2) Frame, Hopper, Skirts and Chute. Structural steel supports from floor without connections to building or equipment. Loading hopper directs material to horizontal section of conveyor. Skirts are provided on one side of loading hopper and both sides of inclined section of conveyor. Discharge chute directs material into Hydrapulper.

(3) Conveyor. Pans, 60 inches wide, 3/8 inch thick, 4 inch high ends, steel wearing shoe, pusher bar of structural angles every fourth pan.

(4) Chain. Steel bar bushed roller chain, high carbon side bars, carbon steel case hardened bushings, single flanged high carbon heat-treated pins and through-rods every other link. Pins and through-rods drilled and supplied with lubrication fittings. Shop-assembled in lengths convenient for handling.

(5) Sprockets. Head sprockets, flame-hardened teeth, bored with keyseat and setscrew.

(6) Bearings. Head shaft, heavy-duty, roller pillow blocks. Foot shaft, normal-duty screw type take-up with 12 inch travel.

(7) Speed Reducer. Helical and/or herringbone Type AGMA rated; service factor 1.5 based on motor horsepower. Provided with motor mounting base and flexible high-speed motor coupling.

(8) Chain Drive. Roller chain, Rex 160. Sprockets, steel cut teeth, keyseated bore and setscrew. Drive sprocket, flame-hardened teeth and shear pin hub.

(9) Drive. Variable-speed drive, by impulse from Foxboro M-N2. Consistency indicator specified hereinafter. Control modulates speed to 50 percent of conveyor capacity. Control deenergizes unit at below 50 percent capacity. Motor, 10 horsepower.

d. Conveyor Pit Sump Pump, Equipment No. 136. Weil No. F-800, sump pump, capacity 15 gpm at 15 foot tdh with 1/4 horsepower, 1,150 rpm general service motor.

Pump complete with couplings, Alemite grease fitting, grease lubricated bronze guide bearings, grease sealed adjustable ball thrust bearing, self-lubricating lead-bronze bottom bearings, bronze impeller and cast iron suction strainer.

e. Cash Register. The cash register was purchased separately by the City from the National Cash Register Company. It was specified to have an indication window to show both on the front and back of the register the weight in pounds and money in U.S. dollars and cents recorded. Cash register now has seven amount rows ($99,999.99) on display window, with accumulating capacity of eight digits ($999,999.99).

Cash register is an adding type, itemizing register for the purpose of adding sales and bringing forward new balances on credit accounts, and has the following accessories and abilities:

Cash register will accumulate the following information in the form of totals under locked control by the operating company management:

- Total number of pounds recorded for any given day. (Matches scale recording)
- Total amount of business recorded for any given day (Cash and credit customers combined)
- Total amount of business recorded for cash customers only, for any given day

Total amount of business recorded for credit customers only, for any given day
Total amount of monies recorded from payments on account
Total business (cash, credit and payments on account) recorded by "A" Weigh-master
Total business (cash, credit and payments on account) recorded by "B" Weigh-master
Total amount of previous balance pickups recorded for any given day

Two drawers which operate upon the depression of "A" and "B" Weigh-master keys, respectively, have removable till trays
Two separate slip insertion tables for use with the scale sales slip and the customer credit statement/ledger, respectively
Ability to print a consecutive number of each transaction sequence on the following media:

Scale sales slip
Customer credit statement/ledger
Detail sales journal

An autographic detail sales journal to print all the details of each transaction in the order in which it occurred. This detail sales journal is under locked control by the operating company management
Prints the following information on the detail sales journal:

Total number of pounds recorded on that transaction
Total amount of money recorded on that transaction
Date of transaction
Consecutive number of transaction
Previous balance owed before transaction
New balance owed after transaction
Monies received as payment on account (if entered on keyboard)

Ability to be subtotaled at any time during the day for the purpose of knowing any or all of the accumulated information up to that point of time. This feature is under locked control by the operating company management
Ability of being totaled out (cleared to zero) at the end of each day This feature is under locked control by the operating company management
A nonresettable special counter for the purpose of counting the number of times the register has been totaled out (cleared to zero)
The following special counters for the purpose of counting the number of transactions that occurred in any given day:

Cash customer transaction counter
Credit customer transaction counter

Prints the following information on the scale sales slip:

Total amount of money recorded on that transaction
Date of transaction
Consecutive number of that transaction

Prints the following information on the customer credit statement/ledger:

Total number of pounds recorded on that transaction
Total amount of money recorded on that transaction
Date of transaction
Consecutive number of that transaction
Previous balance owed before transaction
New balance owed after transaction
Monies received as payment on account

Ability to create a customer credit statement/ledger with up-to-date balance suitable for mailing
Payment on account transaction counter
"A" Weigh-master transaction counter
"B" Weigh-master transaction counter

Constructed in such a manner as to allow for the future addition of some print rows of keys to the left of the keyboard without impairing the accumulating capacity of the register.

The manufacturer of the cash register has cooperated with the City in preparation and supply of business forms compatible with both cash register and the scale, and supplied a desk-top pocket file case for retention and filing alphabetically the customer credit statement/ledger cards.

f. Desk Calculator. Electronic calculator, with no memory, capable of adding, subtracting, multiplying and dividing, and has an eye-ease 12 digit display with overflow and credit balance/minus signal. It has an automatic decimal point and a constant key, and was purchased by the City from the National Cash Register Company.

6. Hydrapulper, Equipment No. 101, and Lubrication Pump, Equipment No. 105

Hydrapulper of adequate capacity to process 13,400 pounds of municipal refuse per hour, reducing all organic material to pass through 3/4 inch diameter holes.

Drives. Hydrapulper, 300 horsepower, 1,200 rpm. Oil pump, 1 horsepower. (Note: Equipment No. 102 - Chopper, deleted from Scope).

7. Hydrapulper Dump Pump, Equipment No. 104

Purpose. Remove slurry from Hydrapulper, circulate it through the liquid cyclone and discharge either to the solid waste or fiber recovery surge tanks
Capacity. 500 gpm at 60 foot tdh
Type and Size. Black Clawson 5 inch BN
Features. Impeller and case CA-15 stainless steel, heat-treated. Roller bearings, end suction - split case. Adapter on suction connects to standard pipe size
Motor. 30 hp, 1,200 rpm

8. Junk Remover, Equipment No. 103 and Washer 148A

Purpose. Operate in conjunction with the Hydrapulper to remove and wash nonpulpable material
Capacity. 3,000 pounds per hour, 60 cubic feet per hour
Type. Junk remover: Chain-operated buckets designed especially for this service. Washer: Rotating continuous type Ransohoff scrap washer
Features. Provided with water sprays for washing slurry from material being removed
Junk remover drive. 5 hp motor, 1,800 rpm conveyor speed, 40 fpm.
Washer drive. 1/2 hp with sycrogear chain, barrel speed 5 rpm

9. Scrap Metal Magnetic Separator, Equipment No. 148B and 148C

General. Furnish and install magnetic separator, chutes and supports between junk remover outlet and skip hoist.

Function. Receives total output of junk remover item No. 103, magnetically separates ferrous scrap metal, discharges ferrous scrap to first 60 inch deep drop-bottom hopper, and discharges nonmagnetic scrap to a second 60 inch deep drop-bottom hopper.

Features. Constructed of materials suitable for wet junk operation and includes furnishing and installing of all separator components, conveyors and conveyor supports, inlet chutes and outlet separator curtains.

Transport conveyor from washer discharge to magnetic separator is a 24 inch rubber belted conveyor with cross-flights on approximately 24 inch centers, 200 fpm speed and is powered by a 3/4 hp motor.

Electromagnet has 300 fpm face conveyor, rubber belted with aluminum cross-flights, and is powered by a 2 hp motor.

10. Liquid Cyclone, Equipment No. 106

Purpose. Remove heavy and coarse particles from the slurry discharged from the Hydrapulper
Capacity. 500 gpm with a pressure drop of 20 psi
Type and Size. Black Clawson, assembly No. 10
Features. Self-contained. Wearing sections, ceramic lined. Rejects chamber with inlet and outlet valves which are air-operated and automatically controlled by timer

11. Liquid Cyclone Rejects Conveyor, Equipment No. 121

Purpose. Convey rejected solids from liquid cyclone discharge to drop-bottom hopper
Type and Size. Link-belt screw, 12 inches in diameter and 8 feet 10 inches long
Features. Trough, 430 stainless steel, perforated one-third the length with holes 1/16 inch diameter. Screw, carbon steel
Drive. 5 hp motor

12. Surge Chest, Equipment No. 127

Purpose. Receive slurry from the liquid cyclone and rejects from fiber recovery plant
Capacity. 60,000 gallons

Chest fabricator supplied steel channel base ring, which was set in concrete foundations under other specifications. Sides were then field-welded to base ring. After chest was completed, concrete sloping cone bottom was installed in chests by General Construction Contractor.

Structural steel shapes. A 36
Plate. Commercial quality hot rolled steel

Welding was in accordance with American Welding Society standards. Chest, complete with connections, was sandblasted and painted with two coats of epoxy paint after erection.

Chests and tanks equipped with Walker Process, Spargers complete with U-bolts, diffusers and mounting plate gaskets, through which compressed air is blown to prevent tanks and chests from freezing.

13. Surge Chest Agitator, Equipment No. 107

Type. Black Clawson cone, for metal chests
Material. Cast iron construction
Drive. 75 hp, 900 rpm motor, V-belt, with cover for outdoor service
Purpose. Maintain uniform consistency in surge chest
Features. Propeller coated with Ceilcote

14. Surge Chest Pump, Equipment No. 108

Purpose. Remove slurry from surge chest and deliver it to the thickener

Capacity. 500 gpm at 60 foot head

Type and Size. Black Clawson 5 inch BN

Features. Impeller and case CA-15 stainless steel. Roller bearings - end suction - split case. Adapter on suction connects to standard pipe size

Motor. 25 hp, 1,200 rpm

15. Thickener, Equipment No. 109

Purpose. Remove water from slurry and thereby increase concentration of solids from 3.5 to 10 percent

Capacity. 350 gpm

Type and Size. Black Clawson, 3-barrel with three 16 inch inclined screws

Material. Mild steel housing and screw, stainless steel basket

Drive. Each screw by individual 15 hp motor with V-belt drive

16. Screw Conveyor, Equipment No. 111b

Purpose. Convey material from the thickener to the press

Capacity. 50 tons per hour (material as received)

Type and Size. Screw conveyor, 12 inch diameter

Material. Mild steel screw and trough

Drive. 3 hp motor

17. High Density Press, Equipment No. 110

Purpose. Remove water from slurry discharged from the thickener and from the sewage treatment plant sludge and thereby increase the concentration of solids to 40 percent

Capacity. 95 tons (oven-dry solids) per 24 hour day, 132 pounds per minute

Type and Size. Rietz Manufacturing Company, "V" Press Model RVP 60

Features. Press wheel diameter 5 feet. Provided with locally mounted control panel with local hand-off-automatic switches for each motor. Local panel includes all necessary transducers, timing and limiting devices, interlocks and all other control appurtenances not included in central solid waste plant panel

Drive. One 50 and two 10 hp motors

18. Sewage Sump Pump, Equipment No. 147

Purpose. Return water from Hi-Density press and excess white water to MCD

Capacity. 150 gpm at 30 foot head

Type and Size. Black Clawson 4 inch, Class JU

Features. Vertical, cast iron bronze-fitted, open impeller, top thrust bearing, bottom bearing graphite, water lubricated by fresh water feed through pipe column. Shaft chrome plated

Motor. 7.5 hp

19. Screw Conveyor, Equipment No. 111a

Purpose. Convey material from the press to the pneumatic feeder

Capacity. 50 tons per hour (material as received)

Type and Size. Screw conveyor, 12 inch diameter

Material. Mild steel screw and trough

Drive. 3 hp motor

20. White Water Chest, Equipment No. 128

Purpose. Receive white water from process and provide a supply for recycle back into the system

Capacity. 30,000 gallons

Construction. Same as Surge Chest, Equipment No. 127

21. White Water Chest Agitator, Equipment No. 112

Purpose. Maintain uniform consistency in white water closet

Drive, 20 hp, 1,200 rpm motor

General Type. Same as Surge Chest Agitator, Equipment No. 107

22. White Water Chest Pump, Equipment No. 113

Purpose. Remove slurry from white water chest and recycle to the Hydrapulper

Capacity. 300 gpm at 47 foot tdh

Type and Size. Black Clawson 4 inch BN

Features. Impeller, cast iron construction. Roller bearings - end suction - split case

Motor. 20 hp, 1,200 rpm

23. Solid Waste Sump Pump, Equipment No. 122

Purpose. Return white water from sump to white water closet

Capacity. 500 gpm at 30 foot head

Type and Size. Black Clawson 4 inch, Class JU

Features. Vertical, cast iron bronze fitted, open impeller, top thrust bearing, bottom bearing graphite, water lubricated by fresh water feed through pipe column. Shaft chrome plated

Motor. 15 hp, 1,200 rpm

24. Sludge Chest, Equipment No. 129

Purpose. Receive sewage treatment plant sludge and provide a uniform feed to the Hi-Density press when the plant is operating

Capacity. 46,000 gallons

Construction. Same as Surge Chest, Equipment No. 127

This chest was modified by Black Clawson to approximately half its design capacity by installing a process water clarifier in the upper portion of the tank. The clarifier is an air-flotation type of Black Clawson's own design and manufacture, and functions to reduce the concentration of lipids and fines in the white water recirculation system.

25. Sludge Storage Chest Agitator, Equipment No. 114

General-Type. Same as Surge Chest Agitator, Equipment No. 107
Purpose. Maintain uniform consistency in sludge storage chest
Drive. 20 hp, 1,200 rpm motor

26. Sludge Storage Chest Pump, Equipment No. 115

Purpose. Transfer sewage treatment plant sludge from sludge chest to inlet of Hi-Density press

Capacity. 25 gpm at 30 foot head

Type and Size. Moyno 2-SWG8

Features. Rotor, high-carbon, high chrome tool steel with hard chrome plating. Stator, Buna-N synthetic rubber. Bearings, radial and thrust, grease-lubricated.

Drive. Mechanical variable speed drive. Motor, 5 hp

27. Reactor, Equipment No. 130

a. General. The fluid bed reactor was furnished by Dorr-Oliver, Inc., as a subcontractor to Black Clawson, complete with feed system combustion gas scrubbers, pumps, burners and blowers. The reactor manufacturer furnished and installed the refractory and corrosion-resistant linings in the reactor and breeching on the jobsite.

b. Type and Arrangement. Reactor includes carbon steel casing which was prefabricated and shipped to jobsite in sections for field erection complete with nozzles, manholes, air inlets and gas outlets, insulation and refractory linings, oil pumps and burners for fuel bed and reactor preheating with pilot assemblies, manual valves, regulators, transformers, FIA-approved controls and safeguards, constriction plates, alloy steel tuyeres, access ladders, platforms, and high silica sand fluid bed "fill." Field erection of the reactor was part of the mechanical construction work.

c. Capacity and Performance. Burning rate. 132 pounds per minute of a mixture of fibrous waste consisting of municipal refuse and sewage sludge.

Solids content	40 percent
Volatile solids	85 percent
Heat content	8,800 Btu per pound, volatile solids

This material is burned without the use of auxiliary fuel except for start-up.

Excess air	40 percent
Bed temperature	1,500 F

d. Materials.

Steel:

Plates A 283, Grade G
Structural members A 36
Welding electrodes A 233, E-60 series
Flanges ANSI B16.5 (plate ring flanges A 283)
Bolts A 307

Stainless Steel:

Sheet and plate A 167, Type 316L and/or 310
High temperature piping Type 316L
Gas ducts Type 304L stainless steel

Refractory:

Rated in accordance with C 24-56 "Standard Method of Test for Pyrometer Cone Equivalent of Refractory Material"
Castable refractories C 401-60
Fire clay and high alumina refractory brick C 27-60
Insulating fire brick C 155-57

e. Reactor Accessories.

Access doors into the windbox and the bed area
Preheat burner mount
Reactor feed nozzles
Sand loading and removal system
Fuel oil guns
Platforms
Sight glasses to observe freeboard and fuel ports
Thermocouple and pressure taps

f. Insulation and Refractory Lining.

Insulation of the reactor is sufficient to provide an average skin temperature of 180F during operation. When the reactor is shut down, the average temperatures of the inert bed do not decrease at a rate greater than 10 F per hour while cooling from 1,500 F to 1,200 F.

g. Fuel Oil System, Equipment No. 0331, 0320.

Purpose. Heat bed to a temperature sufficient to permit introduction of the mixture of pulped refuse and sewage treatment plant sludge.

Capacity. Two preheat burners, 6,000,000 Btu per hour each, burning No. 2 fuel oil. Auxiliary fuel oil is fed into reactor through 18 fuel guns inserted into the fluid bed and automatically controlled with three proportionators, with six guns supplied by each proportionator.

Features. Preheat burner system includes all accessories for coordinated operation of the reactor system including all necessary valves, pumps, strainers, gages, switches and interlocks.

Ignition of the main burner is by propane pilot system, including all necessary controls, valves, igniters and regulators.

Guns are stainless steel, air-cooled and removable.

Pump Drives. One preheat burner pump driven by 1/2 hp motor. One bed burner pump driven by 1 hp motor.

Eighteen spare bed gun ports installed for future addition of liquid industrial waste guns.

h. Gas Ducts.

Purpose. Provide interconnecting ducts for the flow of gases
Components. Ductwork, hangers and supports, expansion joints, refractory and thermal insulation
Material. Reactor gas discharge duct, carbon steel, refractory-lined
Stack. Scrubber outlet self-supporting fiber glass reinforced polyester
Features. Ducts, welded construction, flanged and in sections to facilitate field handling and assembly and maintenance
Water sealed expansion joint in vertical sections to maintain alignment between equipment and prevent excessive stresses from being transmitted to equipment as a result of temperature variations
Supports to prevent vibration, sagging or excessive stresses, with adequate drawings to instruct Installation Contractor

i. Electrical Interlocks.

(1) Preheat Burner. All necessary interlocks provided for the following system conditions in the reactor control panel.

Any of the following conditions automatically shuts off all fuel to and extinguishes the preheat burner flame:

Preheat burner blower stopped
Preheat burner combustion airflow below a preset rate
Any momentary or extended power failure
Flame failure (once flame is established)

(2) Bed Guns. Any of the following conditions automatically shuts off the fuel to the bed fuel guns:

Bed temperature below 1,150 F
Bed temperature above 1,600 F
Fluidizing airflow below a preset rate
Any momentary or extended power failure
High gas temperature to scrubber

(3) Pneumatic Conveyor. Any of the following conditions automatically shuts down the pneumatic feed conveyor to the reactor:

Bed temperature below 1,200 F
Bed temperature above 1,600 F
Fluidizing airflow below a preset rate
Any momentary or extended power failure
High gas temperature to scrubber

Interlocking connections are provided for stopping equipment supplying the pneumatic feed conveyor.

28. Preheat Burner Blower, Equipment No. 142

Purpose. Atomize the fuel oil and supply the preheat burner combustion air
Capacity. Rated 4,500 scfm at 2.0 psig
Type. Centrifugal, multistage design incorporating rotor, housing and antifriction bearings
Features. Complete unit mounted on common base, including flexible coupling, motor, coupling guard, vibration absorbing pads, companion flanges, rubber sleeves and clamps. Bearings, antifriction, grease lubricated
Drive. 60 hp motor

29. Scrubber, Equipment No. 131a and Venturi, Equipment No. 131b

Purpose. Remove particulate matter from the products of combustion discharged from the reactor
Capacity. Cool 71,800 cfm of combustion gases from 1,570 F to 182 F by introduction of 81.5 gpm of water
Ash removed by discharging 30 gpm of water from the scrubber system

Material. Corrosion resistant construction. Venturi scrubber throat elbow and scrubber separator section lined with acid brick. Cooling section constructed of carbon steel lined with polyester

Features. Provisions have been made to permit future application of additional water introduced into top section of scrubber and trays to cool stack gases to 120 F

30. Fluidizing Air Blower, Equipment No. 118

Purpose. Furnish fluidizing air to the reactor windbox

Capacity. Rated 14,850 scfm at 4.4 psig, inlet air temperature 70 F

Type. Centrifugal, multistage design incorporating rotor, housing and antifriction bearings

Features. Complete unit mounted on common base, including flexible coupling, motor, coupling guard, vibration absorbing pads, companion flanges, rubber sleeves and clamps

Bearings. Antifriction, grease lubricated

Drive. 500 hp motor

31. Pneumatic Conveyor With Rotary Feeder, Equipment No. 119

Purpose. Feed the mixture of pulped refuse and sewage-treatment-plant sludge into the reactor

Capacity. 132 pounds per minute on a dry basis, with an actual solids content of 40 percent

Manufacturer. Allen Sherman Hoff

Drives. Pneumatic conveyor, 30 hp motor, rotary feeder, 2 hp motor

32. Scrubber Recycle Pump, Equipment No. 116

Purpose. Circulate water in the Venturi scrubber

Capacity. 600 gpm

Type and Size. Centrifugal Dorr-Oliver, Inc., Model OB-1

Features. Case and cover Hypalon. Impeller Kynar, motor and pump on common base

Drive. "V" belt, 25 hp motor

33. Ash Discharge Pump, Equipment No. 117

Purpose. Deliver ash from the Venturi scrubber system to the MCD clarifier distribution chamber

Capacity. 30 gpm at 20 foot head

Type and Size - Morris - 1 JC8

Features. Cast iron, Ni-hard fitted, especially engineered for handling abrasive slurries

Drive. Direct-connected motor, 3/4 hp, 900 rpm

34. Fuel Oil Storage Tank and Accessories

a. Tank. Furnished by Mechanical Construction Contractor, one 5,000 gallon underground fuel oil storage tank, constructed of welded 1/4 inch thick steel plate, and fitted with 20 inch manhole and bolted gasketed cover, piping connections and internal piping all sized and located as indicated. Base metal of tank thoroughly cleaned after fabrication and coated with two 3/32 inch thick coats of cold-applied processed coal tar enamel, Kopper's Bitumastic No. 50, or equal. Tank is Underwriters' Laboratories labeled for storage of No. 2 fuel oil.

b. Accessories. Preferred Utilities, or equal, accessories as follows:

Fill cap with drain opening, mounted flush with grade
Gage hatch with 3 inch perforated pipe extended to 6 inches from bottom of tank
Brass screened type vent cap
Single poppet fuel oil foot-valve with 20 mesh monel screen. Set bottom of strainer 6 inches from bottom of tank

35. Heating System Fuel Oil Pumps - Equipment No. 145A and 145B

Roper Model 34AM005, rotary type fuel oil pump, close coupled with relief valve, mechanical seals, cast iron housing, bronze bearings and hardened steel gears and shafts
Capacity. 6.3 gph
Motor. 1/4 hp general service, mounted on common baseplate with pump, with coupling and coupling guard

36. Fuel Oil Strainer - Equipment No. 144

Andale No. 104B, 2 inch duplex strainer, cast iron, basket type, with stainless steel 40 mesh wire cloth basket and 125 pound flanged connections.

37. Jib Crane and Hoist, Equipment No. 135

a. General. The General Construction Contractor furnished and installed one job crane, hoist and trolley, of the following specifications:

Height. 18 feet 1 inch (crane base to bottom of boom)
Length. 15 feet 7 inches (mast center to extreme limit of boom)
Hook Position. 15 feet 0 inch (mast center to extreme hoist hook position)
Mast. 18 inch diameter
Head Assembly. Maximum dimensions, 5 feet 1 inch (boom to bottom of head assembly), 1 foot 7 inches (center boom to outside edge of head assembly)

Rotation. Nominally 360 degrees, except for interference with feed conveyor cover. Manually rotated on roller bearings
Capacity. 4,000 pound live load, plus weight of hoist

b. Jib Crane. Floor mounted, self-supporting pillar type jib without counter weight, Abell-Howe, Type J-904.

c. Hoist and Trolley. Electric hoist, McCollum Hoist & Manufacturing Co., low headroom hoist, Type LHE, 4,000 pound capacity, 4 feet per minute speed.

Hoist is complete with required electrical components, including cord reel and push button control station mounted on pillar.

38. Forklift Truck

a. General. The City purchased from Moon Equipment Co., on the basis of separate bids, one Yale gasoline-powered industrial forklift truck, as specified herein, for handling containers 56 inches wide by 42 inches long.

The specifications were not intended to limit bidding to any one or to several manufacturers, and bidders were invited to submit proposals based on their standard design of equipment to perform the intended function.

b. Capacity. Load at 24 inch load center through 154 inch maximum forklift, 4,000 pounds.

c. Dimensions.

Maximum fork height	104 inches minimum
Overall height collapsed	87 inches maximum
Free lift	16 inches minimum
Driver overhead guard height	90 inches maximum
Fork length	48 inches
Maximum turning radius	85 inches

d. Performance.

Maximum travel speed	8 mph minimum
Maximum loaded lifting speed	65 fpm minimum

e. Auxiliary Lifting Device. Hydraulic drop-bottom box dumper for handling and dumping 56 inch wide, 42 inch long and 30 inch deep hoppers manufactured by The Union Metal Mfg. Co., without alteration to these hoppers. Attachment also operates with similar 60 inches deep drop-bottom hoppers. Truck and attachment handles hoppers of either height interchangeably without adjustment.

C. FIBER RECOVERY PLANT

1. Scope

The work under this division included the following equipment which was originally furnished by Black Clawson for installation in the Fiber Recovery Plant by the Mechanical Construction Contractor.

Classifiner
Selectifiers
Centri-Cleaners
Inclined screw thickener
Rietz press (high density)
Side hill thickener
Gyro-flote screen
Classifiner feed pump
Rejects pump
Cleaner supply pump
Side hill white water sump pump
Side hill stock sump pump
White water pump
Selectifier pump
White water chest
Controls and instruments including prewired and piped control panel
Motors and drives
Supervision of field erection, initial operation, and testing of equipment furnished under this division

2. Work Under Other Contracts

Separate contracts were awarded for the following related work:

Erection of all equipment specified herein
Equipment, tank and chest foundations
Interconnecting piping
Electrical wiring external to control panel
Fiber recovery surge tank
Rejects tank
Cleaner supply pump dilution tank
Selectifier dilution tank
Truck loading conveyors
Supports for side hill thickener
Interlocks for sequence starting and stopping of equipment except as otherwise specified
Furnishing and installing pressure gages
Providing sampling connections

3. Capacity and Performance Requirements

System is designed to accept a slurry of 4 percent solids at the rate of 122 pounds of dry solids per minute, and extract therefrom approximately 50 percent of the paper fiber contained therein. The extracted paper fiber is cleaned, screened, and dewatered to approximately 40 percent solids, and is in a commercially marketable condition.

4. Classifiner, Equipment No. 201

Purpose. Receive 1 percent slurry as pumped from the fiber surge tank, remove foreign material, discharge accepts to selectifier dilution tank and rejects to the Gyro-flote screen
Capacity. 600 gpm of 3 to 4 percent slurry
Type and Size. Black Clawson, Type V-R
Drive. 150 hp motor

5. Gyro-Flote Screen, Equipment No. 223

Purpose. Receive the rejects from the classifiner and the 12P selectifier, recycle accepts to the fiber surge tank and discharge the rejects to the reject tank
Capacity. 600 gpm of 2 percent slurry
Type and Size. Black Clawson's No. 2 Gyro-flote screen.
Features. Complete with screen sprays and accessories except accepts collection box and rejects chute and trough were provided under other specifications
Drive. 5 hp, 1,800 rpm motor

Note: This item of equipment proved ineffective and was removed after being bypassed for most of the demonstration period. It was replaced by the 24P Selectifier screen initially used as Equipment No. 203.

6. Selectifier 24P, Equipment No. 203

Purpose. Receive 0.6 percent slurry as pumped from the selectifier dilution tank and discharge the rejects to Equipment No. 204 and accepts to cleaner supply pump dilution tank
Capacity. 2,500 gpm of 0.7 percent slurry
Type and Size. Black Clawson 24P pressure screen
Features. Screen .062 inch diameter holes
Drive. 25 hp 1,800 rpm motor

Note: This item was replaced by a 36P Selectifier screen as part of Black Clawson's design changes intended to increase fiber yield.

7. Selectifier 12P, Equipment No. 204

Purpose. Receive 0.7 percent slurry rejects from Equipment No. 203 and discharge rejects to the Gyro-flote screen and accepts to the selectifier dilution tank
Capacity. 900 gpm of 0.7 percent slurry
Type and Size. Black Clawson 12P pressure screen
Features. Screen, .062 inch diameter holes
Drive. 10 hp, 1,800 rpm motor

Note: This equipment was replaced by a new 24P Selectifier screen similar to Equipment No. 203 as part of Black Clawson's yield improvement design change program.

8. Centri-Cleaners, Equipment No. 207

Purpose. Receive slurry as pumped from the cleaner supply pump dilution tank, separate and remove small heavy particles and very fine fibers from slurry, and discharge accepts to hydrasieve units and rejects to the reject tank. Makes provision for recycle to cleaner supply pump dilution tank
Capacity. 1,700 gpm
Type and Size. Bauer Bros. Centri-cleaners: 16 units No. 606-110P

9. Hydrasieve Units, Equipment No. 210a, b, and c

Purpose. Receive slurry from centri-cleaners, and separate paper stock from water. Deposit stock in separate pits beneath the thickener
Capacity. Inlet flow 1,500 gpm
Type and Size. Bauer Brothers, 48 inch width
Features. Screen mounted on steel frame support.

Note: This equipment was altered during the demonstration period by the addition of spray headers in order to increase the effectiveness of the screens.

10. Incline Screw Thickener, Equipment No. 208

Purpose. Receive and reduce water content of stock pumped from the hydrasieve units pit. Discharge accepts containing 12 percent solids into the Rietz press and liquid rejects into the white water tank
Capacity. Inlet flow 175 gpm
Type and Size. Black Clawson 2 barrel with 9 inch inclined screws
Materials. Mild steel housing and screw and stainless steel basket
Drive. Each screw by individual 5 hp motor with V-belts

11. Rietz Press, Equipment No. 209

Purpose. Remove water from stock discharged from the thickener, increasing the concentration of solids to approximately 40 percent

Capacity. 30 tons (oven-dry solids) per 24 hour day. (42 pounds per minute.)
Type and Size. Rietz Manufacturing Company, V-press Model RVP 36
Features. Press wheel diameter 3 feet. Locally mounted control panel with local hand-off-automatic switches for each motor-local control interlocks and all other control appurtenances not included in central fiber recovery plant panel
Drives. One 20 and two 5 hp motors

12. Pumps

a. Classifiner Feed Pump, Equipment No. 202

Purpose. Remove slurry from fiber recovery surge tank, circulate it through the VR classifiner and discharge into selectifier dilution tank
Capacity. 1,800 gpm at a head of 60 feet
Type and Size. Black Clawson 8 inch, Class BN
Features. Impeller and casing CA-15 stainless steel heat-treated, roller bearings, end suction, split case, companion flanges on suction and discharge to convert to standard pipe sizes
Drive. 25 hp 900 rpm motor, V-belts

b. Rejects Pump, Equipment No. 205

Purpose. Return rejects to the solid waste plant surge chest
Capacity. 250 gpm at a head of 40 feet
Type and Size. Black Clawson 5 inch, Class BN
Features. Impeller and casing CA-15 stainless steel heat-treated, roller bearings, end suction, split case, companion flanges on suction and discharge to convert to standard pipe sizes
Drive. 15 hp, 1,200 rpm motor, V-belt

c. Cleaner Supply Pump, Equipment No. 206

Purpose. Circulate slurry through the centri-cleaners
Capacity. 1,700 gpm at 120 foot head
Type and Size. Black Clawson 8 inch, Class ANI
Features. Horizontally split, double suction. Nickel cast iron casing, stainless steel fitted. Open type impeller. Roller bearings. Shaft, hot rolled alloy steel. Split glands - flexible coupling
Drive. 75 hp, 1,800 rpm motor

d. White Water Sump Pump, Equipment No. 211

Purpose. Remove white water from sump under side hill thickener and discharge it into the white water chest
Capacity. 1,400 gpm at a head of 30 feet
Type and Size. Black Clawson 8 inch, Class JU
Features. Vertical. Open impeller. Top thrust bearing, cast iron bronze fitted. Shaft, chrome plated. Bottom bearing, graphite, water lubricated by fresh water supplied through pipe column
Drive. 25 hp, 900 rpm motor

e. Stock Sump Pump, Equipment No. 212

Purpose. Remove paper stock from side hill thickener sump and deliver to inclined screw thickener
Capacity. 165 gpm at 40 foot head
Type and Size. Black Clawson 4 inch, Class JU
Features. Vertical. Open impeller. Top thrust bearing, cast iron bronze fitted. Shaft, chrome plated. Bottom bearing, graphite, water lubricated by fresh water supplied through pipe column
Drive. 10 hp, 1,200 rpm motor

f. White Water Pump, Equipment No. 213

Purpose. Recycle white water back to the Hydrapulper in the solid waste plant
Capacity. 1,500 gpm at 30 feet tdh
Type and Size. Black Clawson 8 inch, Class ANI
Features. Horizontally split. Double suction. Cast iron bronze-fitted, casing. Open type impeller roller bearings. Shaft, hot rolled alloy steel. Split glands. Flexible coupling with coupling guard

g. Selectifier Feed Pump, Equipment No. 222

Purpose. Receive water from the selectifier dilution tank and circulate it through the 36P selectifier into the cleaner supply pump dilution tank
Capacity. 2,300 gpm at a head of 55 feet
Type and Size. Black Clawson 10 inch, Class ANI
Features. Horizontally split, double suction, nickel cast iron casing. Open type impeller roller bearings. Shaft, hot rolled alloy steel, split glands, flexible coupling and coupling guard
Drive. 40 hp, 1,200 rpm motor

13. White Water Chest, Equipment No. 216

Purpose. Receive white water from the process and supply the pump which recycles the white water
Capacity. 10,000 gallons
Features. Shop fabricated with sloping bottom and connections as shown
Structural Steel. A 36
Plate. Commercial quality hot rolled steel
Welding. American Welding Society standards
Painting. Sandblasted and two coats of shop applied epoxy paint

14. Tanks

The Mechanical Construction Contractor furnished the following tanks, each having open tops with 3/8 inch thick steel sides and 1/4 inch thick steel bottoms. Tank dimensions were as follows:

Equipment Number	Equipment Name	Diameter, Feet	Height, Feet
217	Fiber Recovery Surge Tank	12	9
218	Rejects Tank	5	7
219	Cleaner Supply Dilution Tank	8	10
221	Selectifier Dilution Tank	10	7

Tank height is measured from top of concrete setting ring to top of tank.

Tanks were furnished with all supports, skirts, gaskets, bolts, nozzles, piping connections, and sloping concrete was poured in bottoms after erection.

Tanks are all-welded carbon steel construction, having butt welded joints with complete penetration. Tanks were cleaned and painted in strict accordance with Steel Structures Painting Council Specification SSPC-PS4.04-64T, vinyl paint system No. 4.04. Finish vinyl coat color was as selected by the Engineers.

15. Truck Loading Conveyor No. 220

The Mechanical Construction Contractor furnished and installed a Link-Belt, carbon steel construction, Helicoid flight screw conveyor complete with 12 inch diameter screw, flanged trough with flush and discharge and inlet spout, trough ends, cover plate and electric motor drive on inlet end. The conveyor is 16 feet 8 inches long measured from the centerline of the inlet spout to the centerline of the discharge spout, and is capable of handling 40 pounds per minute of paper pulp containing 60 percent moisture, when installed at an angle of approximately 45 degrees.

16. Truck Conveyor No. 224

The Mechanical Construction Contractor furnished and installed a Link-Belt, carbon steel construction, Helicoid flight screw conveyor complete with 12 inch diameter screw, flanged trough with three discharge spouts located as shown on the drawings, two rack and pinion flat side discharge gates with extended chain wheel operators as indicated on the drawings, trough ends, trough cover plate with inlet spout, and electric motor drive. Conveyor is 13 feet 0 inch long measured from the centerline of the inlet spout to the centerline of the last discharge spout, and is capable of handling 40 pounds per minute of paper pulp containing 60 percent moisture, when installed in a horizontal position.

D. GENERAL PLANT EQUIPMENT

The following items of equipment serve all functions and areas of the combined plant.

1. Air Compressors and Accessories

a. Compressors, Equipment No. 137A and 137B

The Mechanical Construction Contractor furnished and installed two Worthington Type R, Model 140-30, oil-cooled sliding vane type air compressors, each rated at 140 scfm at 100 psig discharge pressure with 30 hp general service motor.

Each unit is a complete factory-wired-and-piped compressed air plant with all integral components including:

- Compressor
- Motor and motor starter
- Capacity controls
- Safety controls
- Oil system
- Control panel
- Cooling air system
- Compressed air inlet filter
- Silencers

Each unit is housed in a steel factory-painted enclosure, and was furnished with an across-the-line motor starter, with three leg thermal overload protection, dual capacity control, combination modulating and timed on-off

Automatic safety controls include high oil temperature switch, high air temperature switch, high air pressure switch, unloaded start switch, and safety valve.

Oil system includes gage, separator, internal filter and air-cooled radiator type oil cooler.

Each compressor package was provided with a pipeline-mounted aftercooler, single shell type, complete with cyclone separator and automatic moisture trap, to cool discharge air to within 15 degrees of incoming water temperature.

Control panel mounted on enclosure includes start-stop buttons, indicator light, discharge air pressure gage, hour meter and demister button.

b. Receiver. 36 inch diameter by 96 inch height vertical air receiver tank, ASME labeled for 100 psig working pressure, and furnished with gage glass, drain trap and pressure gage.

c. Oil Filters, Equipment No. 139. System mounted oil filters are Deltech Model 150, rated for 140 scfm with a maximum pressure drop of 3.0 psi.

d. Air Dryer, Equipment No. 140.

Wilkerson Air Rite, Model 4308-75, refrigerated air dryer
Capacity, 100 scfm at 100 psig, outlet air dew point 35 F
Unit completely factory piped and wired

SECTION VI - INFLUENT AND EFFLUENT ANALYSES

The following tabulations summarize the physical and chemical data obtained from plant operating logs, measurements, and analyses of samples taken during routine monitoring inspections. The sampling and analysis techniques are described in Subsection C of this section of the report.

Charts of the various streams and their characteristics are included to graphically present the variations of these characteristics.

A - OPERATING DATA SUMMARY
(48 PAGES)

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                          CITY OF FRANKLIN
                          ---- -- --------                    01890-09
              SOLID WASTE AND FIBER RECOVERY PLANTS           04-03-73
              ----- ----- --- ----- -------- ------
                        TESTING AND EVALUATION
                        ------- --- ----------
                        OPERATING DATA SUMMARY
                        --------- ---- -------
                       FROM  5/31/71 TO  8/20/72
                       ----          --
01. REFUSE RECEIVED(WEIGHED)     13171.0TONS    95.1PCT. OF TOTAL RECEIVED
02. REFUSE RECEIVED(UNWEIGHED)     684.9TONS     4.9PCT. OF TOTAL RECEIVED
03. TOTAL REFUSE RECEIVED        13855.9TONS   100.0PCT. OF TOTAL RECEIVED
04. NON-PROCESSIBLE MATERIALS      223.3TONS     1.6PCT. OF TOTAL RECEIVED
05. TOTAL REFUSE PROCESSED       13632.6TONS    98.4PCT. OF TOTAL RECEIVED
06. MAGNETIC METAL RECOVERED       931.1TONS     6.7PCT. OF TOTAL RECEIVED
07. NON-MAGNETIC JUNK REJECTS      449.6TONS     3.2PCT. OF TOTAL RECEIVED
08. TOTAL JUNK REMOVED REJECTS    1380.7TONS    10.0PCT. OF TOTAL RECEIVED
09. TOTAL CYCLONE REJECTS         1386.8TONS    10.0PCT. OF TOTAL RECEIVED
10. TOTAL FIBER RECOVERED          307.5TONS     2.2PCT. OF TOTAL RECEIVED
11. TOTAL MATERIAL TO LANDFILL    2059.6TONS    14.9PCT. OF TOTAL RECEIVED
12. TOTAL ORGANIC REJ. BURNED    10557.7TONS    76.2PCT. OF TOTAL RECEIVED
13. NO. OF LICENSED TRUCKS        1616.
14. NO. OF UNLICENSED TRUCKS      2554.
15. NO. OF STD. FEE VEHICLES      2598.
16. OPERATING TIME-HYDRASPOSAL    2194.1HOURS
17. OPERATING TIME-REACTOR        2008.2HOURS
18. OPERATING TIME-FIBRECLAIM      836.9HOURS
19. CITY WATER USED            34598200.GALLON 2537.GAL./TON OF REFUSE PROCESSED
20. WASTE WATER DISCHARGED     27855312.GALLON 2043.GAL./TON OF REFUSE PROCESSED
21. ELECTRIC ENERGY USED        2390400.KWH     175.KWH/TON OF REFUSE PROCESSED
22. FUEL OIL BURNED               44769.GALLON
```

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED			NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS			(09) CYCL. REJ.
	WEIGHED (01)	UNW'D. (02)	TOTAL (03)			(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	
5-31-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6- 1-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6- 2-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6- 3-71	3.8	0.2	4.0	0.0	4.0	0.000	0.000	0.000	0.000
6- 4-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6- 5-71	2.5	0.1	2.6	0.0	2.6	0.000	0.000	0.000	0.000
6- 6-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	6.3	0.3	6.6	0.0	6.6	0.000	0.000	0.000	0.000
6- 7-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6- 8-71	29.0	1.5	30.5	0.0	30.5	2.280	1.120	3.400	2.000
6- 9-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6-10-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6-11-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6-12-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6-13-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	29.0	1.5	30.5	0.0	30.5	2.280	1.120	3.400	2.000
6-14-71	8.7	0.5	9.2	0.0	9.2	0.000	0.000	0.000	0.590
6-15-71	26.3	1.4	27.7	0.0	27.7	1.750	0.960	2.710	2.200
6-16-71	30.6	1.6	32.2	0.0	32.2	2.500	1.275	3.775	3.690
6-17-71	19.2	1.0	20.2	0.0	20.2	1.125	0.695	1.820	2.000
6-18-71	54.0	2.8	56.8	0.0	56.8	3.750	1.800	5.550	7.200
6-19-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6-20-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	138.8	7.2	146.0	0.0	146.0	9.125	4.730	13.855	15.680

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
6-21-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
6-22-71	41.0	2.1	43.1	0.0	43.1	3.850	2.075	5.925	5.200
6-23-71	46.2	2.4	48.6	0.0	48.6	3.800	1.750	5.550	4.650
6-24-71	69.6	3.6	73.2	0.0	73.2	2.060	1.540	3.600	5.990
6-25-71	61.9	3.2	65.1	0.0	65.1	0.000	0.000	0.000	0.000
6-26-71	15.0	0.8	15.8	0.0	15.8	8.530	4.820	13.350	8.860
6-27-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	233.7	12.2	245.9	0.0	245.9	18.240	10.185	28.425	24.700
6-28-71	22.2	1.2	23.4	0.0	23.4	1.625	0.800	2.425	2.650
6-29-71	52.1	2.7	54.8	0.0	54.8	4.720	2.175	6.895	4.730
6-30-71	46.4	2.4	48.8	0.0	48.8	4.390	2.460	6.850	6.100
7- 1-71	47.6	2.5	50.1	0.0	50.1	3.625	2.360	5.985	5.650
7- 2-71	48.7	2.5	51.2	0.0	51.2	0.000	0.000	0.000	0.000
7- 3-71	11.9	0.6	12.5	0.0	12.5	4.500	2.700	7.200	7.000
7- 4-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	228.9	11.9	240.8	0.0	240.8	18.860	10.495	29.355	26.130
7- 5-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
7- 6-71	57.0	3.0	60.0	0.0	60.0	0.000	0.000	0.000	0.000
7- 7-71	53.3	2.8	56.1	0.0	56.1	10.080	6.070	16.150	13.290
7- 8-71	66.0	3.4	69.4	0.0	69.4	3.880	2.090	5.970	5.450
7- 9-71	30.9	1.6	32.5	0.0	32.5	3.200	2.370	5.570	3.590
7-10-71	9.5	0.5	10.0	0.0	10.0	0.000	0.000	0.000	0.000
7-11-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	216.7	11.3	228.0	0.0	228.0	17.160	10.530	27.690	22.330

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
7-12-71	28.7	1.5	30.2	0.0	30.2	2.580	1.190	3.770	4.940
7-13-71	48.5	2.5	51.0	0.7	50.3	3.770	1.410	5.180	5.210
7-14-71	53.7	2.8	56.5	1.2	55.3	4.620	2.880	7.500	5.400
7-15-71	54.3	2.8	57.1	0.0	57.1	0.000	0.000	0.000	0.000
7-16-71	33.9	1.8	35.7	0.0	35.7	7.050	3.170	10.220	9.800
7-17-71	10.4	0.5	10.9	0.0	10.9	0.790	0.545	1.335	1.320
7-18-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	229.5	11.9	241.4	1.9	239.5	18.810	9.195	28.005	26.670
7-19-71	20.6	1.1	21.7	0.0	21.7	1.270	0.645	1.915	2.195
7-20-71	50.5	2.6	53.1	0.0	53.1	3.990	1.550	5.540	6.780
7-21-71	53.0	2.8	55.8	0.0	55.8	3.680	1.450	5.130	6.340
7-22-71	57.3	3.0	60.3	0.0	60.3	4.120	2.500	6.620	6.250
7-23-71	31.4	1.6	33.0	0.0	33.0	3.620	1.615	5.235	4.580
7-24-71	6.9	0.4	7.3	0.0	7.3	0.000	0.000	0.000	0.000
7-25-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	219.7	11.4	231.1	0.0	231.1	16.680	7.760	24.440	26.145
7-26-71	25.9	1.3	27.2	0.0	27.2	0.000	0.000	0.000	0.000
7-27-71	44.8	2.3	47.1	0.0	47.1	5.746	2.559	8.305	8.143
7-28-71	52.3	2.7	55.0	0.0	55.0	3.876	1.913	5.789	5.593
7-29-71	55.0	2.9	57.9	0.0	57.9	0.000	0.000	0.000	0.000
7-30-71	28.8	1.5	30.3	0.0	30.3	5.822	3.204	9.027	8.347
7-31-71	6.5	0.3	6.8	0.0	6.8	0.000	0.000	0.000	0.000
8- 1-71	0.0	0.0	0.0	0.0	0.0	1.768	0.935	2.703	3.426
TOTAL	213.3	11.1	224.4	0.0	224.4	17.212	8.611	25.823	25.508

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

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	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
8- 2-71	21.2	1.1	22.3	0.0	22.3	1.445	0.654	2.099	2.779
8- 3-71	50.0	2.6	52.6	0.0	52.6	4.100	1.970	6.070	5.090
8- 4-71	45.2	2.4	47.6	0.0	47.6	3.340	1.990	5.330	5.210
8- 5-71	53.9	2.8	56.7	0.0	56.7	3.630	1.790	5.420	6.010
8- 6-71	28.9	1.5	30.4	0.0	30.4	2.250	1.020	3.270	3.640
8- 7-71	6.2	0.3	6.5	0.0	6.5	0.970	0.645	1.615	0.780
8- 8-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	205.4	10.7	216.1	0.0	216.1	15.735	8.069	23.804	23.509
8- 9-71	16.3	0.8	17.1	0.0	17.1	1.352	0.788	2.139	1.967
8-10-71	61.6	3.2	64.8	0.0	64.8	3.250	1.670	4.920	6.290
8-11-71	43.8	2.3	46.1	0.0	46.1	2.133	1.271	3.404	2.244
8-12-71	56.3	2.9	59.2	0.0	59.2	2.250	2.240	4.490	6.220
8-13-71	30.4	1.6	32.0	0.0	32.0	3.990	2.280	6.270	6.670
8-14-71	6.3	0.3	6.6	0.0	6.6	0.930	0.670	1.600	1.140
8-15-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	214.7	11.2	225.8	0.0	225.8	13.905	8.919	22.824	24.531
8-16-71	23.1	1.2	24.3	0.0	24.3	0.000	0.000	0.000	0.000
8-17-71	95.0	4.9	99.9	0.0	99.9	5.100	3.040	8.140	7.410
8-18-71	53.4	2.8	56.2	0.0	56.2	6.480	5.710	12.190	11.570
8-19-71	60.7	3.2	63.9	0.0	63.9	4.900	2.970	7.870	7.450
8-20-71	35.9	1.9	37.7	0.0	37.7	2.670	1.500	4.170	5.000
8-21-71	6.4	0.3	6.7	0.0	6.7	0.900	0.660	1.560	1.080
8-22-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	274.5	14.3	288.8	0.0	288.8	20.050	13.880	33.930	32.510

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OPERATING DATA TABULATION

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	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
8-23-71	38.9	2.0	40.9	0.0	40.9	2.980	1.390	4.370	4.900
8-24-71	82.2	4.3	86.5	0.0	86.5	6.340	2.230	8.570	12.670
8-25-71	67.3	3.5	70.8	0.0	70.8	5.310	2.640	7.950	8.350
8-26-71	55.4	2.9	58.3	0.0	58.3	4.250	2.230	6.480	6.640
8-27-71	36.0	1.9	37.9	0.0	37.9	3.750	1.310	5.060	4.350
8-28-71	11.0	0.6	11.6	0.0	11.6	0.910	1.140	2.050	1.695
8-29-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	290.8	15.1	305.9	0.0	305.9	23.540	10.940	34.480	38.605
8-30-71	14.0	0.7	14.7	0.0	14.7	0.000	0.000	0.000	0.000
8-31-71	56.6	2.9	59.5	0.0	59.5	5.300	2.570	7.870	8.750
9- 1-71	53.5	2.8	56.3	0.0	56.3	3.080	1.720	4.800	6.310
9- 2-71	54.0	2.8	56.8	0.0	56.8	4.170	2.200	6.370	6.590
9- 3-71	28.7	1.5	30.2	0.0	30.2	0.000	0.000	0.000	0.000
9- 4-71	14.8	0.8	15.6	0.0	15.6	0.000	0.000	0.000	0.000
9- 5-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	221.6	11.5	233.1	0.0	233.1	12.550	6.490	19.040	21.650
9- 6-71	9.2	0.5	9.7	0.0	9.7	0.000	0.000	0.000	0.000
9- 7-71	60.2	3.1	63.3	0.0	63.3	7.500	3.300	10.800	11.000
9- 8-71	68.0	3.5	71.5	0.0	71.5	3.900	1.390	5.290	5.400
9- 9-71	71.3	3.7	75.0	0.0	75.0	0.000	0.000	0.000	0.000
9-10-71	37.9	2.0	39.9	0.0	39.9	6.250	2.660	8.910	8.560
9-11-71	9.0	0.5	9.5	0.0	9.5	1.310	0.710	2.020	1.340
9-12-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	255.6	13.3	268.9	0.0	268.9	18.960	8.060	27.020	26.300

CITY OF FRANKLIN

OPERATING DATA TABULATION

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	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
9-13-71	29.4	1.5	30.9	0.0	30.9	0.000	0.000	0.000	0.000
9-14-71	58.9	3.1	62.0	0.0	62.0	0.000	0.000	0.000	0.000
9-15-71	53.2	2.8	56.0	0.0	56.0	0.000	0.000	0.000	0.000
9-16-71	62.9	3.3	66.2	0.0	66.2	0.000	0.000	0.000	0.000
9-17-71	36.9	1.9	38.8	0.0	38.8	0.000	0.000	0.000	0.000
9-18-71	4.2	0.2	4.4	0.0	4.4	14.700	5.890	20.590	23.000
9-19-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	245.5	12.8	258.3	0.0	258.3	14.700	5.890	20.590	23.000
9-20-71	27.6	1.4	29.0	0.0	29.0	1.224	0.969	2.193	3.646
9-21-71	64.1	3.3	67.4	6.2	61.2	3.660	1.182	4.842	2.975
9-22-71	56.3	2.9	59.2	0.0	59.2	4.378	2.167	6.545	3.884
9-23-71	87.9	4.6	92.5	0.0	92.5	3.502	2.295	5.797	3.561
9-24-71	33.1	1.7	34.8	0.0	34.8	2.083	1.097	3.179	2.184
9-25-71	8.9	0.5	9.4	0.0	9.4	0.944	0.833	1.776	0.884
9-26-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	277.9	14.5	292.4	6.2	286.2	15.789	8.542	24.332	17.136
9-27-71	35.4	1.8	37.2	7.8	29.4	2.133	1.913	4.046	1.233
9-28-71	53.2	2.8	56.0	0.0	56.0	4.318	2.091	6.409	7.786
9-29-71	72.7	3.8	76.5	0.0	76.5	3.272	1.904	5.177	2.830
9-30-71	76.1	4.0	80.1	0.0	80.1	4.888	1.879	6.766	3.408
10- 1-71	78.3	4.1	82.4	0.0	82.4	3.579	4.786	8.364	8.679
10- 2-71	9.4	0.5	9.9	0.0	9.9	0.000	0.000	0.000	0.000
10- 3-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	325.1	16.9	342.0	7.8	334.2	18.190	12.571	30.761	23.936

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DATE	REFUSE RECEIVED WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
10- 4-71	29.3	1.5	30.8	0.0	30.8	0.000	0.000	0.000	0.000
10- 5-71	48.7	2.5	51.2	0.0	51.2	0.000	0.000	0.000	0.000
10- 6-71	47.0	2.4	49.4	0.0	49.4	0.000	0.000	0.000	0.000
10- 7-71	48.4	2.5	50.9	0.0	50.9	0.000	0.000	0.000	0.000
10- 8-71	41.9	2.2	44.1	5.1	39.0	0.000	0.000	0.000	0.000
10- 9-71	7.0	0.4	7.4	0.0	7.4	15.300	4.700	20.000	14.750
10-10-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	222.3	11.6	233.9	5.1	228.8	15.300	4.700	20.000	14.750
10-11-71	22.9	1.2	24.1	0.0	24.1	0.000	0.000	0.000	0.000
10-12-71	48.3	2.5	50.8	0.0	50.8	0.000	0.000	0.000	0.000
10-13-71	52.6	2.7	55.3	0.0	55.3	0.000	0.000	0.000	0.000
10-14-71	53.7	2.8	56.5	0.0	56.5	0.000	0.000	0.000	0.000
10-15-71	32.2	1.7	33.9	0.0	33.9	0.000	0.000	0.000	0.000
10-16-71	7.9	0.4	8.3	0.0	8.3	24.400	7.400	31.800	26.550
10-17-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	217.6	11.3	228.9	0.0	228.9	24.400	7.400	31.800	26.550
10-18-71	24.8	1.3	26.1	0.0	26.1	2.220	0.485	2.705	2.250
10-19-71	51.6	2.7	54.3	0.0	54.3	3.730	1.590	5.320	4.790
10-20-71	46.6	2.4	49.0	0.0	49.0	3.650	1.575	5.225	6.050
10-21-71	54.4	2.8	57.2	0.0	57.2	0.000	0.000	0.000	0.000
10-22-71	32.2	1.7	33.9	0.0	33.9	4.000	1.110	5.110	9.300
10-23-71	7.1	0.4	7.5	0.0	7.5	1.525	1.080	2.605	0.855
10-24-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	216.7	11.3	228.0	0.0	228.0	15.125	5.840	20.965	23.245

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	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
10-25-71	26.8	1.4	28.2	6.0	22.2	2.180	0.765	2.945	3.470
10-26-71	53.5	2.8	56.3	0.0	56.3	2.350	1.020	3.370	3.730
10-27-71	54.5	2.8	57.3	0.0	57.3	0.000	0.000	0.000	0.000
10-28-71	51.8	2.7	54.5	0.0	54.5	6.700	1.230	7.930	10.100
10-29-71	37.0	1.9	38.9	0.0	38.9	6.300	0.450	6.750	5.500
10-30-71	7.0	0.4	7.4	0.0	7.4	1.140	0.400	1.540	2.750
10-31-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	230.6	12.0	242.6	6.0	236.6	18.670	3.865	22.535	25.550
11- 1-71	24.0	1.2	25.2	0.0	25.2	1.930	1.000	2.930	3.380
11- 2-71	59.1	3.1	62.2	0.0	62.2	2.960	1.120	4.080	6.310
11- 3-71	51.9	2.7	54.6	0.0	54.6	3.130	2.030	5.160	4.960
11- 4-71	47.1	2.4	49.5	0.0	49.5	4.000	1.830	5.830	7.550
11- 5-71	32.2	1.7	33.9	0.0	33.9	2.230	0.860	3.090	3.910
11- 6-71	5.1	0.3	5.4	0.0	5.4	1.220	1.230	2.450	1.280
11- 7-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	219.4	11.4	230.8	0.0	230.8	15.470	8.070	23.540	27.390
11- 8-71	19.9	1.0	20.9	0.0	20.9	0.735	0.580	1.315	2.280
11- 9-71	32.6	1.7	34.3	0.0	34.3	3.000	1.280	4.280	3.630
11-10-71	45.0	2.3	47.3	12.0	35.3	2.275	1.160	3.435	3.340
11-11-71	34.6	1.8	36.4	0.0	36.4	2.180	0.940	3.120	4.210
11-12-71	29.5	1.5	31.0	0.0	31.0	1.730	0.705	2.435	3.210
11-13-71	8.1	0.4	8.5	0.0	8.5	0.900	0.905	1.805	1.320
11-14-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	169.7	8.8	178.5	12.0	166.5	10.820	5.570	16.390	17.990

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED					JUNK REMOVER REJECTS			
	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
11-15-71	31.3	1.6	32.9	6.0	26.9	1.840	1.070	2.910	3.120
11-16-71	31.9	1.7	33.6	0.0	33.6	1.850	1.260	3.110	4.660
11-17-71	36.1	1.9	38.0	0.0	38.0	2.400	1.530	3.930	4.790
11-18-71	36.4	1.9	38.3	0.0	38.3	2.640	0.860	3.500	4.600
11-19-71	29.0	1.5	30.5	0.0	30.5	1.855	0.700	2.555	3.280
11-20-71	8.0	0.4	8.4	0.0	8.4	0.210	0.230	0.440	0.830
11-21-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	172.7	9.0	181.7	6.0	175.7	10.795	5.650	16.445	21.280
11-22-71	28.0	1.5	29.5	0.0	29.5	0.000	0.000	0.000	0.000
11-23-71	23.2	1.2	24.4	0.0	24.4	2.950	1.270	4.220	3.650
11-24-71	29.4	1.5	30.9	0.0	30.9	2.060	1.150	3.210	3.530
11-25-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
11-26-71	44.5	2.3	46.8	0.0	46.8	4.010	1.340	5.350	6.430
11-27-71	6.5	0.3	6.8	0.0	6.8	0.740	0.250	0.990	1.750
11-28-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	131.6	6.8	138.4	0.0	138.4	9.760	4.010	13.770	15.360
11-29-71	20.2	1.1	21.3	0.0	21.3	1.450	0.920	2.370	1.660
11-30-71	34.8	1.8	36.6	12.9	23.7	1.615	0.580	2.195	3.020
12- 1-71	36.3	1.9	38.2	0.0	38.2	2.780	1.150	3.930	5.250
12- 2-71	33.1	1.7	34.8	0.0	34.8	2.640	0.890	3.530	4.700
12- 3-71	31.9	1.7	33.6	5.1	28.5	1.660	0.390	2.050	3.420
12- 4-71	4.7	0.2	4.9	0.0	4.9	0.900	1.060	1.960	1.020
12- 5-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	161.0	8.4	169.4	18.0	151.4	11.045	4.990	16.035	19.070

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
12- 6-71	20.9	1.1	22.0	0.0	22.0	1.280	0.560	1.840	2.650
12- 7-71	27.8	1.4	29.2	0.0	29.2	1.330	0.530	1.860	3.440
12- 8-71	41.9	2.2	44.1	8.0	36.1	2.910	0.660	3.570	3.640
12- 9-71	37.7	2.0	39.7	0.8	38.9	2.125	0.885	3.010	3.960
12-10-71	28.6	1.5	30.1	0.0	30.1	2.890	1.335	4.225	4.395
12-11-71	24.1	1.3	25.4	6.7	18.7	0.000	0.000	0.000	0.000
12-12-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	181.0	9.4	190.4	15.5	174.9	10.535	3.970	14.505	18.085
12-13-71	21.2	1.1	22.3	0.0	22.3	2.601	1.411	4.012	3.630
12-14-71	31.5	1.6	33.1	0.0	33.1	1.369	0.587	1.955	3.850
12-15-71	39.4	2.0	41.4	0.0	41.4	3.485	1.857	5.342	3.715
12-16-71	48.2	2.5	50.7	7.9	42.8	2.440	0.888	3.327	4.496
12-17-71	33.5	1.7	35.2	0.0	35.2	1.743	1.037	2.779	3.026
12-18-71	8.5	0.4	8.9	0.0	8.9	0.000	0.000	0.000	0.000
12-19-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	182.3	9.5	191.8	7.9	183.9	11.636	5.779	17.416	18.717
12-20-71	21.9	1.1	23.0	0.0	23.0	2.550	1.080	3.629	2.620
12-21-71	15.7	0.8	16.5	0.0	16.5	1.369	0.638	2.006	1.913
12-22-71	36.3	1.9	38.2	0.0	38.2	3.077	1.365	4.442	3.188
12-23-71	35.6	1.9	37.5	0.0	37.5	1.587	0.587	2.173	4.446
12-24-71	15.6	0.8	16.4	0.0	16.4	1.675	0.442	2.117	2.133
12-25-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
12-26-71	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	125.1	6.5	131.6	0.0	131.6	10.257	4.110	14.367	14.299

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	REFUSE RECEIVED UNW'D. (02)	REFUSE RECEIVED TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	JUNK REMOVER REJECTS (07) NON-MAG.	JUNK REMOVER REJECTS (08) TOTAL	(09) CYCL. REJ.
12-27-71	22.5	1.2	23.7	0.0	23.7	1.876	0.595	2.470	3.545
12-28-71	28.4	1.5	29.9	0.0	29.9	2.337	0.833	3.170	3.460
12-29-71	33.2	1.7	34.9	0.0	34.9	2.915	0.867	3.782	4.845
12-30-71	32.5	1.7	34.2	0.0	34.2	3.171	1.190	4.361	6.475
12-31-71	24.3	1.3	25.6	0.0	25.6	1.343	0.570	1.913	2.594
1- 1-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
1- 2-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	140.9	7.3	148.2	0.0	148.2	11.642	4.054	15.696	20.918
1- 3-72	24.6	1.3	25.9	0.0	25.9	1.990	0.745	2.735	3.530
1- 4-72	41.0	2.1	43.1	0.0	43.1	2.790	1.135	3.925	4.150
1- 5-72	30.0	1.6	31.6	0.0	31.6	2.686	0.910	3.596	5.070
1- 6-72	46.2	2.4	48.6	0.0	48.6	3.204	1.320	4.524	5.277
1- 7-72	26.4	1.4	27.8	0.0	27.8	1.861	1.139	3.000	2.575
1- 8-72	4.9	0.3	5.2	0.0	5.2	0.000	0.000	0.000	0.000
1- 9-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	173.1	9.0	182.1	0.0	182.1	12.532	5.249	17.781	20.602
1-10-72	24.8	1.3	26.1	0.0	26.1	2.754	1.292	4.046	4.650
1-11-72	29.7	1.5	31.2	0.0	31.2	2.159	0.467	2.626	3.392
1-12-72	35.2	1.8	37.0	0.0	37.0	3.000	1.394	4.394	5.491
1-13-72	37.4	1.9	39.3	0.0	39.3	3.765	1.275	5.040	4.769
1-14-72	23.1	1.2	24.3	0.0	24.3	1.709	0.723	2.431	1.933
1-15-72	6.4	0.3	6.7	0.0	6.7	0.000	0.000	0.000	0.000
1-16-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	156.6	8.1	164.7	0.0	164.7	13.387	5.151	18.538	20.233

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	REFUSE RECEIVED UNW'D. (02)	REFUSE RECEIVED TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	JUNK REMOVER REJECTS (07) NON-MAG.	JUNK REMOVER REJECTS (08) TOTAL	(09) CYCL. REJ.
1-17-72	20.9	1.1	22.0	0.0	22.0	2.320	0.970	3.290	3.220
1-18-72	27.9	1.5	29.4	0.0	29.4	2.080	0.970	3.050	2.415
1-19-72	30.8	1.6	32.4	0.0	32.4	2.500	0.970	3.470	3.700
1-20-72	48.2	2.5	50.7	7.5	43.2	3.090	1.170	4.260	3.580
1-21-72	30.1	1.6	31.7	0.0	31.7	2.910	2.371	5.281	3.553
1-22-72	10.4	0.5	10.9	0.0	10.9	0.000	0.000	0.000	0.000
1-23-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	168.3	8.8	177.1	7.5	169.6	12.900	6.451	19.351	16.468
1-24-72	24.6	1.3	25.9	0.0	25.9	2.435	1.570	4.005	2.480
1-25-72	27.1	1.4	28.5	0.0	28.5	2.275	1.130	3.405	2.800
1-26-72	31.4	1.6	33.0	0.0	33.0	2.150	1.435	3.585	4.230
1-27-72	35.6	1.9	37.5	0.0	37.5	3.210	1.280	4.490	4.235
1-28-72	24.9	1.3	26.2	0.0	26.2	1.410	0.630	2.040	2.800
1-29-72	9.3	0.5	9.8	0.0	9.8	0.000	0.000	0.000	0.000
1-30-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	152.9	8.0	160.9	0.0	160.9	11.480	6.045	17.525	16.545
1-31-72	13.0	0.7	13.7	0.0	13.7	0.000	0.000	0.000	0.000
2- 1-72	38.9	2.0	40.9	12.7	28.2	3.570	1.641	5.210	3.834
2- 2-72	35.1	1.8	36.9	0.0	36.9	2.363	1.165	3.527	2.541
2- 3-72	38.9	2.0	40.9	0.0	40.9	3.825	1.173	4.998	4.998
2- 4-72	28.3	1.5	29.8	0.0	29.8	1.802	0.714	2.516	2.677
2- 5-72	9.4	0.5	9.9	0.0	9.9	0.000	0.000	0.000	0.000
2- 6-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	163.6	8.5	172.1	12.7	159.4	11.560	4.692	16.252	14.050

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                              CITY OF FRANKLIN
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                         OPERATING DATA TABULATION                01890-09
                         --------- ---- ----------                04-03-73

         REFUSE RECEIVED                                 JUNK REMOVER REJECTS
         ------ --------                                 ---- ------- -------
                                   NONPROC    TOTAL     (06)    (07)               (09)
  DATE    WEIGHED UNW'D.  TOTAL    MAT'L.     PROC.     METAL   NON-     (08)      CYCL.
           (01)    (02)   (03)     (04)       (05)      RECOV.  MAG.     TOTAL     REJ.
--------  ------- ------ -------  -------    -------    ------  ------   ------    ------
 2- 7-72    17.9    0.9    18.8      0.0       18.8     1.361   0.595    1.956     2.805
 2- 8-72    23.3    1.2    24.5      0.0       24.5     1.326   0.978    2.303     2.550
 2- 9-72    29.7    1.5    31.2      0.0       31.2     2.269   1.183    3.452     4.590
 2-10-72    32.1    1.7    33.8      0.0       33.8     2.303   1.318    3.621     3.137
 2-11-72    28.2    1.5    29.7      0.0       29.7     3.009   0.903    3.912     3.541
 2-12-72     7.0    0.4     7.4      0.0        7.4     0.000   0.000    0.000     0.000
 2-13-72     0.0    0.0     0.0      0.0        0.0     0.000   0.000    0.000     0.000
          ------- ------ -------  -------    -------    ------  ------   ------    ------
  TOTAL    138.2    7.2   145.4      0.0      145.4    10.269   4.975   15.244    16.622

 2-14-72    21.3    1.1    22.4      0.0       22.4     1.879   0.731    2.610     2.363
 2-15-72    36.5    1.9    38.4      0.0       38.4     2.907   1.190    4.097     2.395
 2-16-72    29.0    1.5    30.5      0.0       30.5     1.281   0.000    1.281     1.607
 2-17-72    33.6    1.7    35.3      0.0       35.3     2.909   0.969    3.878     2.222
 2-18-72    36.8    1.9    38.7      0.0       38.7     2.829   1.114    3.942     3.829
 2-19-72    14.5    0.8    15.3      0.0       15.3     0.000   0.000    0.000     0.000
 2-20-72     0.0    0.0     0.0      0.0        0.0     0.000   0.000    0.000     0.000
          ------- ------ -------  -------    -------    ------  ------   ------    ------
  TOTAL    171.7    8.9   180.6      0.0      180.6    11.803   4.003   15.807    12.415

 2-21-72    70.7    3.7    74.4      0.0       74.4     2.032   0.756    2.788     2.644
 2-22-72    25.1    1.3    26.4      0.0       26.4     1.284   0.000    1.284     2.626
 2-23-72    31.7    1.6    33.3      0.0       33.3     4.123   2.808    6.930     5.134
 2-24-72    48.8    2.5    51.3      0.0       51.3     1.092   1.500    2.592     0.677
 2-25-72    25.4    1.3    26.7      0.0       26.7     0.667   1.542    2.208     6.075
 2-26-72     9.7    0.5    10.2      0.0       10.2     0.000   0.000    0.000     0.000
 2-27-72     0.0    0.0     0.0      0.0        0.0     0.000   0.000    0.000     0.000
          ------- ------ -------  -------    -------    ------  ------   ------    ------
  TOTAL    211.4   11.0   222.4      0.0      222.4     9.195   6.606   15.802    17.157
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CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	REFUSE RECEIVED UNW'D. (02)	REFUSE RECEIVED TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	JUNK REMOVER REJECTS (07) NON-MAG.	JUNK REMOVER REJECTS (08) TOTAL	(09) CYCL. REJ.
2-28-72	21.8	1.1	22.9	0.0	22.9	2.967	1.598	4.564	3.596
2-29-72	30.3	1.6	31.9	0.0	31.9	2.507	0.935	3.442	3.782
3- 1-72	85.5	4.4	89.9	0.0	89.9	2.763	1.564	4.326	4.454
3- 2-72	34.7	1.8	36.5	0.0	36.5	3.519	0.404	3.923	3.400
3- 3-72	37.7	2.0	39.7	8.0	31.7	1.657	0.723	2.380	3.876
3- 4-72	8.0	0.4	8.4	0.0	8.4	0.000	0.000	0.000	0.000
3- 5-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	218.0	11.3	229.3	8.0	221.3	13.413	5.223	18.636	19.108
3- 6-72	22.7	1.2	23.9	3.0	20.9	1.930	0.442	2.371	3.145
3- 7-72	27.5	1.4	28.9	0.0	28.9	2.575	0.944	3.519	4.080
3- 8-72	31.8	1.7	33.5	0.0	33.5	2.729	1.177	3.905	5.092
3- 9-72	36.1	1.9	38.0	0.0	38.0	2.371	0.807	3.179	5.159
3-10-72	27.4	1.4	28.8	0.0	28.8	2.525	0.434	2.958	3.621
3-11-72	4.4	0.2	4.6	0.0	4.6	0.000	0.000	0.000	0.000
3-12-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	149.9	7.8	157.7	3.0	154.7	12.129	3.803	15.933	21.097
3-13-72	28.3	1.5	29.8	0.0	29.8	2.500	1.140	3.640	4.900
3-14-72	32.7	1.7	34.4	0.0	34.4	2.405	1.110	3.515	4.325
3-15-72	36.8	1.9	38.7	0.0	38.7	2.600	1.825	4.425	5.150
3-16-72	37.4	1.9	39.3	0.0	39.3	2.750	0.870	3.620	5.430
3-17-72	30.5	1.6	32.1	0.0	32.1	2.450	0.820	3.270	4.900
3-18-72	10.1	0.5	10.6	0.0	10.6	0.000	0.000	0.000	0.000
3-19-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	175.8	9.1	184.9	0.0	184.9	12.705	5.765	18.470	24.705

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED			NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS			(09) CYCL. REJ.
	WEIGHED (01)	UNW'D. (02)	TOTAL (03)			(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	
3-20-72	22.1	1.1	23.2	0.6	22.6	2.300	1.750	4.050	6.000
3-21-72	56.3	2.9	59.2	0.0	59.2	4.120	2.810	6.930	6.000
3-22-72	52.7	2.7	55.4	0.0	55.4	5.200	1.500	6.700	7.050
3-23-72	37.5	1.9	39.5	0.0	39.5	3.300	1.430	4.730	5.050
3-24-72	33.1	1.7	34.8	0.0	34.8	2.450	0.860	3.310	2.950
3-25-72	9.5	0.5	10.0	0.0	10.0	0.000	0.000	0.000	0.000
3-26-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	211.2	11.0	222.2	0.6	221.6	17.370	8.350	25.720	27.050
3-27-72	25.3	1.3	26.6	0.0	26.6	2.525	1.075	3.600	3.940
3-28-72	29.8	1.5	31.3	0.0	31.3	2.875	1.430	4.305	2.500
3-29-72	33.2	1.7	34.9	0.0	34.9	2.300	0.780	3.080	4.500
3-30-72	39.2	2.0	41.2	0.0	41.2	2.450	1.207	3.657	4.930
3-31-72	28.4	1.5	29.9	0.0	29.9	2.910	1.130	4.040	4.090
4- 1-72	10.0	0.5	10.5	0.0	10.5	0.000	0.000	0.000	0.000
4- 2-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	165.9	8.6	174.5	0.0	174.5	13.060	5.622	18.682	19.960
4- 3-72	29.6	1.5	31.1	7.5	23.6	1.490	0.720	2.210	3.675
4- 4-72	43.0	2.2	45.2	0.0	45.2	1.490	0.700	2.190	2.275
4- 5-72	40.4	2.1	42.5	0.0	42.5	4.140	0.700	4.840	5.400
4- 6-72	53.9	2.8	56.7	0.0	56.7	2.090	1.650	3.740	6.400
4- 7-72	41.6	2.2	43.8	0.0	43.8	3.366	1.295	4.661	2.711
4- 8-72	14.0	0.7	14.7	0.0	14.7	0.000	0.000	0.000	0.000
4- 9-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	222.5	11.6	234.1	7.5	226.6	12.576	5.064	17.640	20.461

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
4-10-72	34.5	1.8	36.3	0.0	36.3	2.700	1.375	4.075	5.650
4-11-72	50.0	2.6	52.6	0.0	52.6	2.880	1.500	4.380	4.070
4-12-72	89.2	4.6	93.8	0.0	93.8	3.990	2.600	6.590	6.820
4-13-72	85.9	4.5	90.4	0.0	90.4	0.000	0.000	0.000	0.000
4-14-72	40.0	2.1	42.1	0.0	42.1	5.850	2.750	8.600	9.300
4-15-72	35.3	1.8	37.1	0.0	37.1	2.750	2.045	4.795	4.480
4-16-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	334.9	17.4	352.3	0.0	352.3	18.170	10.270	28.440	30.320
4-17-72	64.4	3.3	67.7	0.0	67.7	5.240	2.675	7.915	8.700
4-18-72	88.8	4.6	93.4	0.0	93.4	4.110	1.375	5.485	5.710
4-19-72	92.3	4.8	97.1	0.5	96.6	3.950	2.270	6.220	6.150
4-20-72	105.1	5.5	110.6	11.0	99.6	7.600	3.740	11.340	11.600
4-21-72	31.6	1.6	33.2	0.0	33.2	5.000	1.235	6.235	8.500
4-22-72	6.6	0.3	6.9	0.0	6.9	0.000	0.000	0.000	0.000
4-23-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	388.8	20.2	409.0	11.5	397.5	25.900	11.295	37.195	40.660
4-24-72	31.9	1.7	33.6	8.7	24.9	1.640	1.620	3.260	3.925
4-25-72	27.7	1.4	29.1	0.0	29.1	3.500	1.545	5.045	4.390
4-26-72	31.0	1.6	32.6	0.0	32.6	1.130	0.000	1.130	2.540
4-27-72	113.1	5.9	119.0	11.1	107.9	5.000	2.910	7.910	8.050
4-28-72	69.3	3.6	72.9	0.0	72.9	6.550	2.610	9.160	10.400
4-29-72	14.3	0.7	15.0	0.0	15.0	0.000	0.000	0.000	0.000
4-30-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	287.3	14.9	302.2	19.8	282.4	17.820	8.685	26.505	29.305

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	REFUSE RECEIVED UNW'D. (02)	REFUSE RECEIVED TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	JUNK REMOVER REJECTS (07) NON-MAG.	JUNK REMOVER REJECTS (08) TOTAL	(09) CYCL. REJ.
5- 1-72	27.7	1.4	29.1	0.0	29.1	2.980	1.580	4.560	3.875
5- 2-72	50.1	2.6	52.7	9.0	43.7	1.440	0.595	2.035	2.720
5- 3-72	44.2	2.3	46.5	0.0	46.5	2.940	1.800	4.740	5.400
5- 4-72	42.2	2.2	44.4	0.0	44.4	3.930	1.140	5.070	5.610
5- 5-72	40.2	2.1	42.3	7.8	34.5	2.540	1.100	3.640	4.130
5- 6-72	20.4	1.1	21.5	0.0	21.5	0.000	0.000	0.000	0.000
5- 7-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	224.8	11.7	236.5	16.8	219.7	13.830	6.215	20.045	21.735
5- 8-72	31.9	1.7	33.5	1.6	31.9	3.400	1.820	5.220	4.840
5- 9-72	48.9	2.5	51.4	0.0	51.4	3.750	15.000	18.750	5.150
5-10-72	46.5	2.4	48.9	0.0	48.9	2.600	1.240	3.840	5.000
5-11-72	47.1	2.4	49.5	0.0	49.5	3.350	1.570	4.920	5.700
5-12-72	56.1	2.9	59.1	0.0	59.1	4.150	1.780	5.930	6.800
5-13-72	10.7	0.6	11.2	0.0	11.2	0.000	0.000	0.000	0.000
5-14-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	241.2	12.5	253.7	1.6	252.1	17.250	21.410	38.660	27.490
5-15-72	32.2	1.7	33.9	0.0	33.9	2.740	1.170	3.910	2.640
5-16-72	51.3	2.7	54.0	0.0	54.0	2.990	1.140	4.130	4.170
5-17-72	46.4	2.4	48.8	0.0	48.8	3.460	1.540	5.000	5.500
5-18-72	49.3	2.6	51.9	0.0	51.9	2.560	1.380	3.940	4.740
5-19-72	38.5	2.0	40.5	0.0	40.5	4.000	1.590	5.590	5.610
5-20-72	13.0	0.7	13.7	1.9	11.8	0.000	0.000	0.000	0.000
5-21-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	230.7	12.0	242.7	1.9	240.8	15.750	6.820	22.570	22.660

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
5-22-72	28.7	1.5	30.2	0.0	30.2	3.340	1.230	4.570	5.550
5-23-72	48.4	2.5	50.9	0.0	50.9	3.340	1.500	4.840	4.870
5-24-72	60.7	3.2	63.9	0.0	63.9	3.340	1.680	5.020	6.050
5-25-72	48.4	2.5	50.9	0.0	50.9	3.350	1.945	5.295	5.580
5-26-72	46.7	2.4	49.1	0.0	49.1	3.800	1.460	5.260	7.050
5-27-72	10.4	0.5	10.9	0.0	10.9	0.000	0.000	0.000	0.000
5-28-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	243.3	12.7	256.0	0.0	256.0	17.170	7.815	24.985	29.100
5-29-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
5-30-72	46.2	2.4	48.6	0.0	48.6	3.690	1.220	4.910	6.640
5-31-72	55.5	2.9	58.4	0.0	58.4	1.680	0.000	1.680	2.890
6- 1-72	50.7	2.6	53.3	0.0	53.3	3.560	1.990	5.550	5.450
6- 2-72	40.7	2.1	42.8	0.0	42.8	5.050	2.490	7.540	8.390
6- 3-72	21.4	1.1	22.5	1.7	20.8	0.000	0.000	0.000	0.000
6- 4-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	214.5	11.2	225.7	1.7	224.0	13.980	5.700	19.680	23.370
6- 5-72	32.1	1.7	33.8	0.0	33.8	3.630	1.120	4.750	5.235
6- 6-72	47.2	2.5	49.7	0.0	49.7	2.990	0.000	2.990	3.860
6- 7-72	44.1	2.3	46.4	0.0	46.4	2.980	1.450	4.430	2.495
6- 8-72	58.0	3.0	61.0	0.0	61.0	4.400	2.735	7.135	7.705
6- 9-72	53.0	2.8	55.8	0.0	55.8	2.145	1.485	3.630	4.545
6-10-72	11.7	0.6	12.3	0.0	12.3	0.000	0.000	0.000	0.000
6-11-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	246.1	12.8	258.9	0.0	258.9	16.145	6.790	22.935	23.840

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	REFUSE RECEIVED UNW'D. (02)	REFUSE RECEIVED TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	JUNK REMOVER REJECTS (07) NON-MAG.	JUNK REMOVER REJECTS (08) TOTAL	(09) CYCL. REJ.
6-12-72	21.3	1.1	22.4	0.0	22.4	2.142	1.394	3.536	3.400
6-13-72	56.4	2.9	59.3	0.0	59.3	2.540	2.375	4.915	5.300
6-14-72	50.4	2.6	53.0	0.0	53.0	3.180	1.825	5.005	5.025
6-15-72	49.8	2.6	52.4	0.0	52.4	2.525	2.345	4.870	4.190
6-16-72	43.8	2.3	46.1	0.0	46.1	4.270	1.625	5.895	5.210
6-17-72	12.6	0.7	13.3	0.0	13.3	0.000	0.000	0.000	0.000
6-18-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	234.3	12.2	246.5	0.0	246.5	14.657	9.564	24.221	23.125
6-19-72	21.5	1.1	22.6	0.0	22.6	2.540	1.160	3.700	4.550
6-20-72	58.0	3.0	61.0	0.0	61.0	2.800	1.300	4.100	4.370
6-21-72	42.4	2.2	44.6	0.0	44.6	3.730	1.975	5.705	4.930
6-22-72	49.9	2.6	52.5	0.0	52.5	2.510	1.440	3.950	4.240
6-23-72	34.5	1.8	36.3	0.0	36.3	2.540	1.600	4.140	2.710
6-24-72	11.5	0.6	12.1	0.0	12.1	0.000	0.000	0.000	0.000
6-25-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	217.8	11.3	229.1	0.0	229.1	14.120	7.475	21.595	20.800
6-26-72	28.5	1.5	30.0	1.5	28.5	3.560	2.100	5.660	3.940
6-27-72	41.4	2.2	43.6	1.5	42.1	1.430	0.000	1.430	3.780
6-28-72	36.7	1.9	38.6	0.0	38.6	4.200	2.660	6.860	5.110
6-29-72	47.9	2.5	50.4	0.3	50.1	3.310	1.360	4.670	4.750
6-30-72	41.1	2.1	43.2	0.5	42.7	3.160	2.365	5.525	4.750
7- 1-72	11.5	0.6	12.1	1.0	11.1	0.000	0.000	0.000	0.000
7- 2-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	207.1	10.8	217.9	4.8	213.1	15.660	8.485	24.145	22.330

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

	REFUSE RECEIVED					JUNK REMOVER REJECTS			
DATE	WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
7- 3-72	31.8	1.7	33.5	1.3	32.2	3.360	1.625	4.985	4.640
7- 4-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
7- 5-72	43.7	2.3	46.0	0.5	45.5	2.825	1.285	4.110	3.300
7- 6-72	52.2	2.7	54.9	1.3	53.6	3.410	1.770	5.180	5.650
7- 7-72	33.6	1.7	35.3	1.0	34.3	3.760	1.105	4.865	4.155
7- 8-72	10.6	0.6	11.2	0.8	10.4	0.000	0.000	0.000	0.000
7- 9-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	171.9	8.9	180.8	4.9	175.9	13.355	5.785	19.140	17.745
7-10-72	32.7	1.7	34.4	0.7	33.7	3.460	1.290	4.750	4.630
7-11-72	46.0	2.4	48.4	1.0	47.4	2.500	1.375	3.875	3.530
7-12-72	42.4	2.2	44.6	0.0	44.6	5.400	1.825	7.225	5.800
7-13-72	46.1	2.4	48.5	1.0	47.5	3.505	1.310	4.815	4.580
7-14-72	38.1	2.0	40.1	0.5	39.6	3.360	1.680	5.040	3.920
7-15-72	10.8	0.6	11.4	1.0	10.4	0.000	0.000	0.000	0.000
7-16-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	216.1	11.2	227.3	4.2	223.1	18.225	7.480	25.705	22.460
7-17-72	32.6	1.7	34.3	0.5	33.8	3.625	1.585	5.210	3.280
7-18-72	41.1	2.1	43.2	1.0	42.2	2.875	0.000	2.875	3.825
7-19-72	39.2	2.0	41.2	0.8	40.4	3.010	2.010	5.020	4.740
7-20-72	39.8	2.1	41.9	0.5	41.4	4.280	2.610	6.890	7.270
7-21-72	42.9	2.2	45.1	0.0	45.1	1.050	0.000	1.050	2.710
7-22-72	11.5	0.6	12.1	0.8	11.3	0.000	0.000	0.000	0.000
7-23-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	207.1	10.8	217.9	3.6	214.3	14.840	6.205	21.045	21.825

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED			NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS			(09) CYCL. REJ.
	WEIGHED (01)	UNW'D. (02)	TOTAL (03)			(06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	
7-24-72	31.1	1.6	32.7	0.0	32.7	3.675	1.225	4.900	5.325
7-25-72	47.9	2.5	50.4	1.3	49.1	3.240	1.360	4.600	3.970
7-26-72	43.7	2.3	46.0	2.2	43.8	3.480	1.580	5.060	4.800
7-27-72	52.4	2.7	55.1	5.0	50.1	3.610	1.460	5.070	4.600
7-28-72	39.0	2.0	41.0	2.3	38.7	1.920	0.720	2.640	3.950
7-29-72	11.1	0.6	11.7	1.3	10.4	0.000	0.000	0.000	0.000
7-30-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	225.2	11.7	236.9	12.1	224.8	15.925	6.345	22.270	22.645
7-31-72	24.1	1.3	25.4	0.8	24.6	2.440	1.010	3.450	3.940
8- 1-72	36.3	1.9	38.2	0.3	37.9	3.390	1.180	4.570	3.760
8- 2-72	34.2	1.8	36.0	0.5	35.5	3.230	1.460	4.690	3.620
8- 3-72	47.6	2.5	50.1	0.3	49.8	3.560	1.725	5.285	5.040
8- 4-72	38.3	2.0	40.3	1.8	38.5	2.580	1.600	4.180	3.980
8- 5-72	10.3	0.5	10.8	0.3	10.5	0.000	0.000	0.000	0.000
8- 6-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	190.8	9.9	200.7	4.0	196.7	15.200	6.975	22.175	20.340
8- 7-72	33.9	1.8	35.7	1.3	34.4	3.710	1.365	5.075	3.360
8- 8-72	41.5	2.2	43.7	1.0	42.7	2.448	1.071	3.519	2.550
8- 9-72	41.5	2.2	43.7	0.8	42.9	3.944	1.675	5.619	4.854
8-10-72	49.0	2.5	51.5	0.8	50.7	2.422	1.488	3.910	3.816
8-11-72	41.5	2.2	43.7	1.0	42.7	4.088	3.366	7.454	4.105
8-12-72	8.3	0.4	8.7	0.3	8.4	0.000	0.000	0.000	0.000
8-13-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	215.7	11.2	226.9	5.2	221.7	16.613	8.964	25.577	18.686

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

DATE	REFUSE RECEIVED WEIGHED (01)	UNW'D. (02)	TOTAL (03)	NONPROC MAT'L. (04)	TOTAL PROC. (05)	JUNK REMOVER REJECTS (06) METAL RECOV.	(07) NON-MAG.	(08) TOTAL	(09) CYCL. REJ.
8-14-72	37.2	1.9	39.1	1.0	38.1	2.610	1.110	3.720	3.760
8-15-72	32.8	1.7	34.5	1.0	33.5	2.654	1.046	3.700	2.839
8-16-72	39.3	2.0	41.3	2.3	39.0	2.779	0.969	3.748	3.664
8-17-72	49.2	2.6	51.8	0.1	51.7	3.706	1.471	5.177	3.876
8-18-72	38.1	2.0	40.1	1.0	39.1	3.128	1.692	4.819	4.242
8-19-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
8-20-72	0.0	0.0	0.0	0.0	0.0	0.000	0.000	0.000	0.000
TOTAL	196.6	10.2	206.8	5.4	201.4	14.878	6.286	21.164	18.380

CITY OF FRANKLIN

OPERATING DATA TABULATION

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
5-31-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6- 1-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6- 2-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6- 3-71	0.0	0.0	4.0	1.	0.	0.	0.0	0.0	0.0		
6- 4-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6- 5-71	0.0	0.0	2.6	0.	0.	0.	0.0	0.0	0.0		
6- 6-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.0	0.0	6.6	1.	0.	0.	0.0	0.0	0.0		
6- 7-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6- 8-71	0.0	3.1	25.1	4.	0.	0.	6.5	2.0	0.0		
6- 9-71	0.0	0.0	0.0	0.	0.	0.	0.0	3.5	0.0		
6-10-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6-11-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6-12-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6-13-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.0	3.1	25.1	4.	0.	0.	6.5	5.5	0.0	9130.	9387.
6-14-71	0.0	0.6	8.6	0.	0.	0.	1.9	1.0	0.0		
6-15-71	0.0	3.2	22.8	5.	0.	0.	5.5	5.5	0.0		
6-16-71	0.0	5.0	24.7	5.	0.	2.	5.8	5.8	0.0		
6-17-71	0.0	2.7	16.4	3.	1.	0.	4.0	3.6	0.0		
6-18-71	0.0	9.0	44.1	0.	0.	0.	7.0	9.0	0.0		
6-19-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6-20-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.0	20.4	116.5	13.	1.	2.	24.2	24.9	0.0	9356.	12068.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	NO. OF VEHICLES UNLIC. TRUCKS (14)	NO. OF VEHICLES STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	OPER.TIME, HOURS REAC. (17)	OPER.TIME, HOURS FIBER (18)	REJ. BURN. LB/HR (12A)	REF. PROC. LB/HR (05A)
6-21-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
6-22-71	0.0	7.3	32.0	0.	0.	0.	6.9	7.8	0.0		
6-23-71	0.0	6.4	38.4	0.	0.	0.	8.0	6.1	0.0		
6-24-71	0.0	7.5	63.6	0.	0.	0.	10.5	10.5	0.0		
6-25-71	0.0	0.0	65.1	0.	0.	0.	6.1	6.5	0.0		
6-26-71	0.0	13.7	-6.4	0.	0.	0.	8.5	8.5	0.0		
6-27-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.0	34.9	192.7	0.	0.	0.	40.0	39.4	0.0	9783.	12293.
6-28-71	0.0	3.4	18.3	0.	0.	0.	3.8	3.5	0.0		
6-29-71	0.0	6.9	43.2	0.	0.	0.	11.1	8.0	0.0		
6-30-71	0.0	8.6	35.9	3.	11.	8.	9.2	7.0	0.0		
7- 1-71	0.0	8.0	38.4	3.	11.	7.	8.2	7.5	0.0		
7- 2-71	0.0	0.0	51.2	5.	12.	19.	9.0	9.5	0.0		
7- 3-71	0.0	9.7	-1.7	2.	5.	6.	3.3	4.0	0.0		
7- 4-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.0	36.6	185.3	13.	39.	40.	44.6	39.5	0.0	9383.	10798.
7- 5-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
7- 6-71	0.0	0.0	60.0	5.	9.	13.	11.3	11.0	1.0		
7- 7-71	0.0	19.4	26.6	4.	12.	8.	8.1	8.2	0.0		
7- 8-71	0.0	7.5	58.0	3.	13.	6.	8.0	8.6	2.5		
7- 9-71	0.0	6.0	23.3	3.	8.	9.	5.3	5.3	0.0		
7-10-71	0.0	0.0	10.0	2.	3.	17.	1.4	2.9	0.0		
7-11-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	0.0	32.9	177.9	17.	45.	53.	34.1	36.8	3.5	9671.	13371.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	NO. OF VEHICLES UNLIC. TRUCKS (14)	NO. OF VEHICLES STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	OPER.TIME, HOURS REAC. (17)	OPER.TIME, HOURS FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
7-12-71	0.0	6.1	21.5	3.	8.	19.	5.7	6.2	0.0		
7-13-71	0.0	7.3	39.9	3.	8.	8.	6.4	7.3	1.0		
7-14-71	0.5	9.5	41.9	2.	13.	15.	7.8	8.1	4.0		
7-15-71	0.0	0.0	57.1	4.	11.	8.	5.3	6.7	2.0		
7-16-71	0.0	13.0	15.6	4.	10.	6.	8.3	8.3	3.0		
7-17-71	0.0	1.9	8.3	2.	3.	15.	2.1	3.2	0.0		
7-18-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.5	37.8	184.3	18.	53.	71.	35.6	39.8	10.0	9262.	13457.
7-19-71	4.2	2.8	13.4	5.	5.	10.	3.3	3.0	0.0		
7-20-71	0.0	8.3	40.8	4.	9.	8.	6.4	6.7	2.0		
7-21-71	8.5	7.8	35.8	1.	12.	5.	8.5	9.8	4.8		
7-22-71	0.0	8.8	47.4	4.	12.	9.	9.7	11.5	5.1		
7-23-71	4.5	6.2	18.7	3.	5.	9.	6.6	6.9	4.3		
7-24-71	0.0	0.0	7.3	1.	3.	3.	0.0	0.8	0.0		
7-25-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	17.2	33.9	163.3	18.	46.	44.	34.5	38.7	16.2	8441.	13399.
7-26-71	0.0	0.0	27.2	4.	7.	11.	0.0	0.0	0.0		
7-27-71	9.7	10.7	21.0	3.	10.	8.	11.4	11.7	6.5		
7-28-71	4.7	7.5	38.9	2.	18.	4.	7.0	7.8	6.0		
7-29-71	0.0	0.0	57.9	5.	12.	3.	0.0	0.0	0.0		
7-30-71	4.8	11.6	8.1	5.	8.	5.	11.0	12.4	8.7		
7-31-71	0.0	0.0	6.8	3.	2.	10.	0.0	3.4	0.0		
8- 1-71	0.0	4.4	-6.1	0.	0.	0.	4.3	5.5	4.3		
TOTAL	19.2	34.1	153.9	22.	57.	41.	33.7	40.8	25.5	7542.	13317.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
8- 2-71	0.0	3.4	17.4	3.	5.	15.	3.6	4.2	3.6		
8- 3-71	0.0	7.1	41.4	3.	11.	6.	6.7	7.0	6.7		
8- 4-71	5.4	7.2	31.6	3.	7.	5.	6.1	6.9	5.5		
8- 5-71	0.0	7.8	45.3	3.	10.	12.	8.4	8.3	7.0		
8- 6-71	5.2	4.7	18.3	4.	6.	7.	4.5	5.3	4.5		
8- 7-71	0.0	1.4	4.1	3.	0.	9.	1.3	2.1	1.3		
8- 8-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	10.6	31.6	158.2	19.	39.	54.	30.6	33.8	28.6	9359.	14123.
8- 9-71	0.0	2.8	13.0	3.	5.	5.	2.9	2.9	2.9		
8-10-71	5.9	8.0	47.7	4.	11.	6.	6.3	4.2	5.1		
8-11-71	6.0	3.5	34.4	2.	8.	7.	3.2	3.4	3.2		
8-12-71	0.0	8.5	48.5	5.	12.	9.	8.1	6.0	6.0		
8-13-71	4.5	9.0	14.5	4.	8.	6.	7.6	7.0	7.0		
8-14-71	0.0	1.8	3.9	2.	2.	14.	2.8	3.2	2.8		
8-15-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	16.4	33.4	162.1	20.	46.	47.	30.9	27.7	27.0	11703.	14618.
8-16-71	0.0	0.0	24.3	3.	5.	8.	1.3	1.4	1.3		
8-17-71	5.1	10.5	79.2	5.	14.	6.	11.8	8.9	11.8		
8-18-71	5.1	17.3	27.3	4.	10.	6.	14.6	13.0	5.6		
8-19-71	4.8	10.4	43.8	4.	8.	7.	9.4	9.5	7.4		
8-20-71	3.5	6.5	25.0	4.	7.	8.	5.2	6.0	5.2		
8-21-71	0.0	1.7	4.1	1.	2.	17.	1.9	1.3	1.6		
8-22-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.7	0.0		
TOTAL	18.5	46.4	203.8	21.	46.	52.	44.2	40.8	32.9	9991.	13066.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
8-23-71	0.0	6.3	31.7	3.	10.	10.	6.4	5.9	3.3		
8-24-71	3.5	14.9	61.7	5.	13.	12.	12.0	11.6	8.0		
8-25-71	6.0	11.0	48.5	3.	12.	11.	10.6	11.1	5.5		
8-26-71	4.7	8.9	40.5	2.	10.	7.	10.1	9.9	7.6		
8-27-71	0.0	5.7	28.5	4.	6.	7.	5.5	4.6	3.0		
8-28-71	3.4	2.8	4.4	2.	4.	13.	2.0	3.4	2.0		
8-29-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.9	0.0		
TOTAL	17.6	49.5	215.2	19.	55.	60.	46.6	47.4	29.4	9082.	13130.
8-30-71	0.8	0.0	13.9	3.	3.	4.	2.4	2.3	2.0		
8-31-71	0.0	11.3	42.9	5.	9.	10.	8.3	8.3	3.0		
9- 1-71	0.0	8.0	45.2	2.	9.	10.	7.9	8.0	2.0		
9- 2-71	0.0	8.8	43.8	3.	11.	6.	10.1	9.9	0.0		
9- 3-71	0.0	0.0	30.2	2.	5.	0.	0.0	1.5	0.0		
9- 4-71	0.0	0.0	15.6	2.	4.	5.	0.0	1.0	0.0		
9- 5-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.8	28.1	191.6	17.	41.	35.	28.7	32.0	7.0	11977.	16246.
9- 6-71	0.0	0.0	9.7	2.	2.	5.	0.0	0.0	0.0		
9- 7-71	0.0	14.3	41.5	6.	11.	11.	11.8	11.7	0.0		
9- 8-71	0.0	6.8	60.8	2.	11.	5.	7.2	7.5	0.0		
9- 9-71	0.0	0.0	75.0	3.	13.	10.	5.5	6.5	3.0		
9-10-71	0.0	11.2	22.4	4.	8.	8.	7.2	8.8	0.0		
9-11-71	0.0	2.0	6.1	2.	3.	5.	1.2	2.2	0.0		
9-12-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.0	34.4	215.6	19.	48.	44.	32.9	37.7	3.0	11436.	16346.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
9-13-71	0.0	0.0	30.9	0.	0.	0.	3.8	2.8	0.0		
9-14-71	0.0	0.0	62.0	0.	0.	0.	0.0	0.0	0.0		
9-15-71	0.0	0.0	56.0	0.	0.	0.	6.4	6.7	0.0		
9-16-71	0.0	0.0	66.2	0.	0.	0.	2.4	4.0	2.0		
9-17-71	0.0	0.0	38.8	0.	0.	0.	2.6	3.3	2.2		
9-18-71	0.0	28.9	-39.2	0.	0.	0.	9.2	9.1	7.3		
9-19-71	0.0	0.0	0.0	0.	0.	0.	7.4	5.9	6.3		
TOTAL	0.0	28.9	214.7	0.	0.	0.	31.8	31.8	17.8	13502.	16243.
9-20-71	0.0	4.6	23.2	3.	6.	5.	5.3	7.3	4.8		
9-21-71	0.0	10.4	53.4	3.	12.	13.	5.0	5.3	4.0		
9-22-71	0.0	6.1	48.8	3.	11.	8.	7.9	8.0	7.3		
9-23-71	0.0	5.9	83.1	3.	19.	3.	9.7	6.2	8.7		
9-24-71	0.0	3.3	29.5	4.	9.	5.	5.9	5.6	4.9		
9-25-71	0.0	1.7	6.7	2.	3.	6.	2.6	4.1	1.3		
9-26-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.1	0.0		
TOTAL	0.0	31.9	244.7	18.	60.	40.	36.4	37.6	31.0	13015.	15723.
9-27-71	0.0	10.9	24.2	4.	7.	8.	5.7	3.6	5.5		
9-28-71	0.0	9.9	41.8	4.	9.	3.	13.1	10.7	11.4		
9-29-71	0.0	4.7	68.5	3.	11.	5.	9.4	11.8	7.7		
9-30-71	0.0	5.3	69.9	3.	12.	6.	14.5	14.3	12.6		
10- 1-71	0.0	13.5	65.3	3.	8.	6.	4.2	5.9	3.6		
10- 2-71	0.0	0.0	9.9	2.	4.	7.	0.0	0.0	0.0		
10- 3-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	0.0	44.3	279.5	19.	51.	35.	46.9	46.3	40.8	12074.	14252.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
10- 4-71	0.0	0.0	30.8	4.	6.	10.	0.0	1.0	0.0		
10- 5-71	0.0	0.0	51.2	3.	8.	11.	9.3	11.7	0.0		
10- 6-71	0.0	0.0	49.4	4.	9.	9.	6.1	7.0	0.0		
10- 7-71	0.0	0.0	50.9	4.	9.	4.	13.6	18.3	0.0		
10- 8-71	0.0	5.1	39.0	6.	11.	9.	6.0	7.8	0.0		
10- 9-71	0.0	19.5	-27.4	1.	3.	3.	12.6	12.5	0.0		
10-10-71	0.0	0.0	0.0	0.	0.	0.	0.0	2.5	0.0		
TOTAL	0.0	24.5	194.0	22.	46.	46.	47.6	60.8	0.0	6382.	9612.
10-11-71	0.0	0.0	24.1	4.	5.	8.	4.1	2.4	0.0		
10-12-71	0.0	0.0	50.8	3.	12.	2.	3.6	4.7	0.0		
10-13-71	0.0	0.0	55.3	5.	10.	9.	7.1	6.9	0.0		
10-14-71	0.0	0.0	56.5	5.	10.	4.	11.7	11.7	0.0		
10-15-71	0.0	0.0	33.9	6.	6.	4.	8.5	8.6	0.0		
10-16-71	0.0	34.0	-50.0	2.	2.	10.	2.2	2.3	0.0		
10-17-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.0	34.0	170.6	25.	45.	37.	37.2	37.6	0.0	9073.	12307.
10-18-71	0.0	2.7	21.1	4.	6.	12.	3.8	3.8	1.0		
10-19-71	0.0	6.4	44.2	4.	8.	2.	7.6	8.1	1.0		
10-20-71	0.0	7.6	37.7	3.	10.	7.	7.3	7.7	0.0		
10-21-71	0.0	0.0	57.2	4.	11.	5.	2.5	3.1	0.0		
10-22-71	0.0	10.4	19.5	5.	6.	3.	8.8	11.5	0.0		
10-23-71	0.0	1.9	4.0	2.	3.	7.	0.3	1.2	0.0		
10-24-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.6	0.0		
TOTAL	0.0	29.1	183.8	22.	44.	36.	30.3	37.0	2.0	9933.	15047.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
10-25-71	0.0	10.2	15.8	3.	4.	1.	4.7	4.7	0.0		
10-26-71	0.0	4.7	49.2	3.	12.	5.	5.4	6.0	0.0		
10-27-71	0.0	0.0	57.3	4.	11.	5.	3.6	3.5	0.0		
10-28-71	0.0	11.3	36.5	5.	12.	6.	12.5	12.4	0.0		
10-29-71	0.0	6.0	26.7	5.	8.	6.	8.0	8.0	0.0		
10-30-71	0.0	3.1	3.1	2.	4.	13.	1.3	1.3	0.0		
10-31-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.0	35.4	188.5	22.	51.	36.	35.5	36.9	0.0	10217.	13329.
11- 1-71	0.0	4.4	18.9	3.	6.	10.	4.2	4.5	0.0		
11- 2-71	0.0	7.4	51.8	4.	8.	6.	7.4	8.4	0.0		
11- 3-71	0.0	7.0	44.5	2.	11.	5.	8.4	9.7	0.0		
11- 4-71	0.0	9.4	36.2	3.	9.	7.	9.7	10.2	0.0		
11- 5-71	0.0	4.8	26.9	6.	6.	6.	5.6	6.1	0.0		
11- 6-71	0.0	2.5	1.6	2.	1.	5.	1.6	1.8	0.0		
11- 7-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.8	0.0		
TOTAL	0.0	35.5	179.9	20.	41.	39.	36.9	42.5	0.0	8465.	12510.
11- 8-71	0.0	2.9	17.3	3.	4.	3.	3.3	4.4	2.3		
11- 9-71	0.0	4.9	26.4	5.	9.	1.	5.8	5.2	5.2		
11-10-71	0.0	16.5	28.6	4.	8.	5.	3.9	5.0	4.0		
11-11-71	0.0	5.1	29.1	4.	8.	2.	7.6	6.7	6.0		
11-12-71	0.0	3.9	25.4	5.	6.	1.	6.2	5.4	4.5		
11-13-71	0.0	2.2	5.4	2.	2.	8.	1.4	1.5	1.4		
11-14-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.0	35.6	132.1	23.	37.	20.	28.2	29.2	23.4	9051.	11810.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	NO. OF VEHICLES UNLIC. TRUCKS (14)	NO. OF VEHICLES STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	OPER.TIME, HOURS REAC. (17)	OPER.TIME, HOURS FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
11-15-71	0.0	10.2	20.9	4.	7.	5.	5.3	5.4	5.2		
11-16-71	0.0	5.9	25.8	3.	7.	12.	6.3	5.0	6.2		
11-17-71	0.0	6.3	29.3	3.	10.	3.	7.7	6.6	6.9		
11-18-71	0.0	5.5	30.2	4.	9.	3.	7.4	5.3	6.9		
11-19-71	0.0	4.0	24.7	5.	7.	2.	5.5	6.3	4.0		
11-20-71	0.0	1.1	7.1	2.	3.	2.	3.1	1.0	0.0		
11-21-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.0	32.9	138.0	21.	43.	27.	35.3	30.6	29.2	9017.	9954.
11-22-71	0.0	0.0	29.5	4.	6.	4.	0.0	1.0	0.0		
11-23-71	0.0	4.9	16.5	4.	5.	1.	9.9	7.0	8.0		
11-24-71	0.0	4.7	24.2	2.	7.	4.	7.9	7.8	2.4		
11-25-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
11-26-71	0.0	7.8	35.0	10.	9.	8.	8.1	6.9	0.0		
11-27-71	0.0	2.0	4.1	2.	3.	6.	2.0	2.6	0.0		
11-28-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.1	0.0		
TOTAL	0.0	19.4	109.3	22.	30.	23.	27.9	27.4	10.4	7979.	9924.
11-29-71	1.7	2.6	15.5	4.	3.	1.	6.4	3.6	4.7		
11-30-71	1.6	16.5	16.9	3.	5.	9.	4.5	4.2	3.7		
12- 1-71	2.2	6.4	26.8	5.	7.	7.	6.4	6.2	5.0		
12- 2-71	2.7	5.6	23.9	4.	7.	4.	7.5	5.4	6.0		
12- 3-71	0.0	8.9	23.0	5.	8.	1.	4.4	5.5	0.0		
12- 4-71	0.0	2.1	2.0	2.	2.	6.	2.4	2.4	0.0		
12- 5-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	8.2	42.1	108.1	23.	32.	28.	31.6	28.3	19.4	7639.	9581.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	NO. OF VEHICLES UNLIC. TRUCKS (14)	NO. OF VEHICLES STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	OPER.TIME, HOURS REAC. (17)	OPER.TIME, HOURS FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
12- 6-71	1.0	3.2	16.5	2.	6.	2.	3.7	3.8	2.8		
12- 7-71	1.8	4.0	22.1	3.	5.	2.	6.4	4.6	5.7		
12- 8-71	2.9	12.3	26.0	4.	8.	2.	7.8	4.3	5.9		
12- 9-71	2.2	5.6	29.7	4.	9.	2.	7.6	5.4	6.0		
12-10-71	0.4	5.7	21.1	5.	5.	3.	5.8	2.0	1.0		
12-11-71	0.0	6.7	18.7	2.	6.	9.	7.5	6.3	7.5		
12-12-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	8.2	37.6	134.1	20.	39.	20.	38.8	27.4	28.9	9789.	9016.
12-13-71	0.8	5.0	13.9	2.	6.	4.	8.1	7.0	2.0		
12-14-71	2.0	4.4	25.3	2.	6.	3.	6.8	5.0	6.2		
12-15-71	4.6	5.6	27.8	6.	10.	4.	7.1	6.5	5.3		
12-16-71	3.5	13.3	31.5	5.	11.	4.	7.4	7.6	4.6		
12-17-71	1.9	4.1	27.5	6.	11.	7.	6.4	5.1	4.0		
12-18-71	0.0	0.0	8.9	2.	3.	7.	0.0	0.0	0.0		
12-19-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	12.8	32.4	135.0	23.	47.	29.	35.8	31.2	22.1	8653.	10274.
12-20-71	1.1	3.7	15.7	3.	9.	5.	4.8	6.9	2.2		
12-21-71	1.5	2.5	11.1	4.	3.	2.	3.3	2.3	3.0		
12-22-71	2.7	4.6	27.9	2.	10.	5.	7.0	5.4	6.2		
12-23-71	0.0	5.0	30.8	4.	8.	4.	6.0	6.1	0.0		
12-24-71	0.0	2.6	12.2	5.	4.	7.	2.6	3.3	0.0		
12-25-71	0.0	0.0	0.0	0.	0.	0.	0.0	1.1	0.0		
12-26-71	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	5.2	18.4	97.7	18.	34.	23.	23.7	25.9	11.4	7544.	11106.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
12-27-71	0.4	4.1	17.2	4.	4.	6.	4.4	5.3	0.0		
12-28-71	0.0	4.3	23.2	8.	5.	7.	5.9	6.2	0.0		
12-29-71	1.7	5.7	24.6	4.	7.	8.	6.7	6.1	3.0		
12-30-71	0.0	7.7	23.4	1.	5.	13.	8.0	8.7	0.0		
12-31-71	0.0	3.2	21.1	6.	7.	7.	3.6	3.7	0.0		
1- 1-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.4	0.0		
1- 2-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	2.1	25.0	109.5	23.	28.	41.	28.6	31.2	3.0	7019.	10366.
1- 3-72	0.0	4.3	19.6	4.	4.	8.	4.1	5.7	0.0		
1- 4-72	0.8	5.3	34.3	6.	12.	4.	6.3	6.4	0.4		
1- 5-72	0.0	6.0	22.9	11.	3.	4.	5.7	7.6	0.0		
1- 6-72	0.0	6.6	38.8	5.	12.	6.	9.4	6.3	0.0		
1- 7-72	0.7	3.7	21.5	6.	5.	3.	6.2	7.3	0.9		
1- 8-72	0.0	0.0	5.2	2.	2.	7.	4.1	0.4	4.1		
1- 9-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.7	0.0		
TOTAL	1.5	25.9	142.2	34.	38.	32.	35.8	34.4	5.4	8270.	10173.
1-10-72	0.0	5.9	17.4	4.	9.	3.	8.6	6.7	0.0		
1-11-72	3.7	3.9	21.5	4.	6.	7.	6.1	4.0	5.5		
1-12-72	0.0	6.9	27.1	3.	9.	9.	7.4	6.3	0.0		
1-13-72	0.7	6.0	28.8	6.	7.	2.	7.3	6.5	0.9		
1-14-72	0.0	2.7	19.9	4.	8.	8.	4.8	4.6	0.0		
1-15-72	0.0	0.0	6.7	1.	1.	2.	0.0	1.3	0.0		
1-16-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.3	0.0		
TOTAL	4.4	25.4	121.6	22.	40.	31.	34.2	30.7	6.4	7921.	9634.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	REAC. (17)	FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
1-17-72	0.0	4.2	15.5	6.	3.	10.	5.7	3.6	0.0		
1-18-72	0.0	3.4	23.9	5.	6.	5.	6.8	4.0	0.0		
1-19-72	0.0	4.7	25.2	4.	7.	4.	6.3	5.5	0.0		
1-20-72	0.0	12.2	35.4	5.	11.	8.	9.1	6.2	0.0		
1-21-72	0.0	5.9	22.8	5.	18.	10.	7.2	6.3	0.0		
1-22-72	0.0	0.0	10.9	3.	2.	14.	3.4	1.3	2.3		
1-23-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.5	0.0		
TOTAL	0.0	30.4	133.7	28.	47.	51.	38.5	27.4	2.3	9761.	8808.
1-24-72	0.0	4.0	19.4	5.	8.	6.	8.5	5.9	0.0		
1-25-72	0.0	3.9	22.3	6.	6.	4.	4.6	3.7	0.0		
1-26-72	0.0	5.7	25.2	4.	9.	1.	7.8	6.1	0.0		
1-27-72	0.0	5.5	28.7	2.	10.	2.	8.4	5.3	0.0		
1-28-72	2.6	3.4	18.7	6.	8.	1.	5.6	2.9	2.9		
1-29-72	0.0	0.0	9.8	0.	0.	0.	0.0	1.0	0.0		
1-30-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	2.6	22.6	124.2	23.	41.	14.	34.9	25.7	2.9	9662.	9218.
1-31-72	0.0	0.0	13.7	4.	5.	3.	2.5	1.9	0.0		
2- 1-72	0.0	18.2	19.2	5.	9.	3.	5.5	6.0	0.0		
2- 2-72	1.6	3.7	29.2	4.	10.	3.	6.7	6.0	3.4		
2- 3-72	0.4	6.2	30.6	2.	10.	3.	6.0	5.1	0.7		
2- 4-72	0.0	3.4	24.6	5.	8.	4.	4.5	3.9	0.0		
2- 5-72	0.0	0.0	9.9	2.	3.	2.	0.0	1.2	0.0		
2- 6-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.7	0.0		
TOTAL	2.0	31.4	127.1	22.	45.	18.	25.2	24.8	4.1	10249.	12651.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
2- 7-72	0.2	3.4	13.8	3.	5.	0.	4.3	3.5	0.5		
2- 8-72	0.5	3.5	19.2	6.	7.	4.	3.9	4.3	1.0		
2- 9-72	2.0	5.8	21.2	6.	10.	0.	6.7	4.8	1.6		
2-10-72	0.6	4.5	26.4	4.	10.	6.	5.5	5.2	1.0		
2-11-72	0.0	4.4	22.2	7.	8.	3.	4.8	5.1	0.0		
2-12-72	0.0	0.0	7.4	1.	3.	4.	0.0	0.5	0.0		
2-13-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.6	0.0		
TOTAL	3.3	21.6	110.2	27.	43.	17.	25.2	24.0	4.1	9185.	11539.
2-14-72	1.9	3.1	15.5	4.	7.	6.	4.9	2.8	1.9		
2-15-72	2.8	3.6	29.1	4.	11.	4.	7.2	4.7	2.9		
2-16-72	1.4	1.6	26.2	3.	9.	9.	3.5	0.0	1.5		
2-17-72	2.4	3.2	26.9	4.	10.	7.	7.5	0.0	4.4		
2-18-72	0.2	4.9	30.7	4.	9.	5.	6.5	0.0	0.9		
2-19-72	0.0	0.0	15.3	2.	5.	10.	0.0	0.0	0.0		
2-20-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	8.7	16.4	143.7	21.	51.	41.	29.6	7.5	11.6	38314.	12205.
2-21-72	1.4	3.4	67.5	3.	7.	8.	4.3	0.0	2.4		
2-22-72	1.8	2.6	20.7	3.	7.	6.	6.3	0.0	3.0		
2-23-72	1.2	7.9	20.1	2.	10.	2.	6.7	0.0	3.3		
2-24-72	0.7	2.2	47.4	3.	10.	3.	2.9	0.0	1.3		
2-25-72	0.0	7.6	18.4	3.	9.	6.	10.4	5.8	0.0		
2-26-72	0.0	0.0	10.2	2.	4.	5.	0.0	1.7	0.0		
2-27-72	0.0	0.0	0.0	0.	0.	0.	0.0	6.5	0.0		
TOTAL	5.1	23.8	184.4	16.	47.	30.	30.6	14.0	10.0	26337.	14535.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
2-28-72	0.0	5.2	14.8	4.	7.	6.	7.4	4.8	1.9		
2-29-72	0.0	4.7	24.7	5.	8.	5.	7.2	7.9	0.0		
3- 1-72	0.0	6.0	81.2	5.	9.	8.	8.3	7.7	0.0		
3- 2-72	0.8	3.8	28.4	3.	9.	1.	6.5	8.3	2.0		
3- 3-72	2.0	12.6	23.4	5.	11.	3.	7.2	6.4	3.1		
3- 4-72	0.0	0.0	8.4	2.	5.	4.	0.0	0.9	0.0		
3- 5-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.7	0.0		
TOTAL	2.8	32.3	180.8	24.	49.	27.	36.6	36.7	7.0	9853.	12095.
3- 6-72	2.0	6.6	13.4	4.	7.	10.	6.5	3.1	4.0		
3- 7-72	2.6	5.0	18.7	5.	8.	5.	7.3	7.2	4.4		
3- 8-72	2.3	6.3	22.1	6.	10.	4.	7.0	3.9	3.7		
3- 9-72	1.6	6.0	28.1	3.	10.	6.	7.6	7.0	2.6		
3-10-72	1.3	4.1	21.0	6.	10.	7.	7.2	6.6	1.9		
3-11-72	0.0	0.0	4.6	1.	3.	12.	0.0	1.2	0.0		
3-12-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.6	0.0		
TOTAL	9.8	27.9	107.9	25.	48.	44.	35.6	29.6	16.6	7290.	8691.
3-13-72	1.5	6.0	19.7	7.	9.	14.	8.0	5.6	2.8		
3-14-72	1.9	5.4	24.7	7.	8.	6.	6.2	4.1	3.2		
3-15-72	2.2	7.0	27.0	4.	10.	11.	7.8	5.8	4.7		
3-16-72	1.1	6.3	29.2	2.	9.	8.	7.3	6.8	2.5		
3-17-72	1.6	5.7	22.3	7.	7.	5.	5.4	2.6	3.4		
3-18-72	0.0	0.0	10.6	2.	6.	13.	0.0	0.7	0.0		
3-19-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	8.2	30.5	133.5	29.	49.	57.	34.7	26.6	16.6	10040.	10659.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
3-20-72	1.7	8.3	10.9	5.	8.	9.	7.3	7.5	3.2		
3-21-72	3.3	8.8	43.0	3.	16.	10.	10.8	7.0	6.7		
3-22-72	2.8	8.6	38.9	2.	13.	7.	10.3	6.5	5.5		
3-23-72	1.9	6.5	27.8	5.	10.	2.	6.5	5.6	3.1		
3-24-72	1.0	3.8	27.6	7.	11.	4.	4.6	2.5	1.5		
3-25-72	0.0	0.0	10.0	4.	4.	12.	0.0	1.1	0.0		
3-26-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.6	0.0		
TOTAL	10.7	36.0	158.1	26.	62.	44.	39.5	30.8	20.0	10267.	11219.
3-27-72	1.3	5.0	17.8	4.	6.	11.	6.4	4.1	2.9		
3-28-72	1.6	3.9	22.9	5.	10.	9.	7.1	5.3	4.6		
3-29-72	1.6	5.3	25.7	2.	10.	4.	6.0	3.4	3.5		
3-30-72	1.4	6.1	31.2	7.	8.	11.	6.9	5.1	3.9		
3-31-72	1.7	5.2	20.0	8.	5.	16.	6.2	3.7	4.6		
4- 1-72	0.0	0.0	10.5	2.	4.	11.	0.0	0.9	0.0		
4- 2-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.6	0.0		
TOTAL	7.7	25.6	128.2	28.	43.	62.	32.6	23.1	19.5	11102.	10707.
4- 3-72	1.7	11.9	16.1	4.	7.	9.	6.8	3.2	4.0		
4- 4-72	1.9	3.0	38.9	8.	9.	5.	6.6	5.4	4.4		
4- 5-72	3.8	6.1	28.5	5.	11.	6.	13.6	7.2	9.2		
4- 6-72	2.5	8.1	44.1	7.	12.	12.	12.1	9.2	6.5		
4- 7-72	1.6	4.0	34.8	6.	2.	2.	10.7	6.5	4.5		
4- 8-72	0.0	0.0	14.7	3.	5.	6.	0.0	1.0	0.0		
4- 9-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.5	0.0		
TOTAL	11.5	33.0	177.0	33.	46.	40.	49.8	33.0	28.6	10727.	9100.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	NO. OF VEHICLES UNLIC. TRUCKS (14)	NO. OF VEHICLES STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	OPER.TIME, HOURS REAC. (17)	OPER.TIME, HOURS FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
4-10-72	0.7	7.0	25.8	8.	6.	9.	10.2	6.3	4.5		
4-11-72	1.5	5.6	42.7	8.	9.	7.	13.4	9.6	6.2		
4-12-72	2.9	9.4	77.5	6.	18.	7.	15.7	9.9	7.5		
4-13-72	0.0	0.0	90.4	6.	16.	5.	0.0	0.0	0.0		
4-14-72	0.0	12.1	24.2	7.	8.	11.	18.5	12.0	0.0		
4-15-72	1.5	6.5	26.4	3.	8.	14.	6.9	5.1	6.9		
4-16-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	6.6	40.6	287.0	38.	65.	53.	64.7	43.7	25.1	13133.	10891.
4-17-72	1.2	11.4	49.9	6.	10.	8.	15.4	13.0	3.9		
4-18-72	0.5	7.1	81.7	7.	10.	17.	10.2	6.8	1.0		
4-19-72	1.1	9.0	83.1	4.	16.	5.	10.5	9.3	2.0		
4-20-72	1.8	26.3	74.8	8.	15.	4.	18.3	16.9	3.4		
4-21-72	4.2	9.7	14.3	8.	6.	15.	12.7	9.7	9.9		
4-22-72	0.0	0.0	6.9	3.	2.	17.	0.0	1.1	0.0		
4-23-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.9	0.0		
TOTAL	8.8	63.5	310.8	36.	59.	66.	67.1	57.7	20.2	10774.	11848.
4-24-72	1.9	14.2	15.8	6.	4.	14.	5.6	3.1	4.3		
4-25-72	1.0	5.9	18.7	7.	6.	14.	5.4	4.1	3.8		
4-26-72	1.1	2.5	27.8	5.	8.	9.	7.8	5.5	6.0		
4-27-72	3.4	22.1	88.5	6.	21.	9.	16.4	12.0	12.1		
4-28-72	2.6	13.0	50.7	6.	11.	8.	15.3	11.9	11.8		
4-29-72	0.0	0.0	15.0	3.	8.	14.	0.0	1.9	0.0		
4-30-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.9	0.0		
TOTAL	10.0	57.8	216.6	33.	58.	68.	50.5	39.4	38.0	10996.	11186.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	REAC. (17)	FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
5- 1-72	1.5	5.5	19.2	6.	7.	11.	5.9	4.1	5.7		
5- 2-72	0.5	12.3	38.5	7.	8.	7.	6.5	4.7	0.5		
5- 3-72	2.2	7.2	34.2	6.	11.	12.	8.5	7.1	6.8		
5- 4-72	1.4	6.7	32.3	5.	11.	3.	8.5	6.8	6.3		
5- 5-72	1.0	13.0	25.7	8.	6.	9.	7.1	4.5	4.5		
5- 6-72	0.0	0.0	21.5	3.	6.	19.	0.0	1.0	0.0		
5- 7-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	6.6	44.7	171.3	35.	49.	61.	36.5	29.0	23.8	11814.	12038.
5- 8-72	1.4	8.3	20.4	4.	3.	6.	6.4	4.2	4.4		
5- 9-72	1.4	20.2	26.1	8.	6.	3.	7.4	6.6	5.9		
5-10-72	0.6	6.2	39.4	8.	9.	10.	6.8	5.2	1.3		
5-11-72	1.6	7.3	37.3	6.	10.	10.	7.8	6.9	5.5		
5-12-72	2.0	8.6	44.3	7.	10.	4.	7.8	6.8	5.0		
5-13-72	0.0	0.0	11.2	3.	5.	12.	0.0	0.9	0.0		
5-14-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.7	0.0		
TOTAL	7.0	50.5	178.9	36.	43.	45.	36.2	31.3	22.1	11433.	13927.
5-15-72	1.5	3.8	25.8	7.	4.	4.	6.7	5.2	4.6		
5-16-72	1.4	5.3	44.3	8.	9.	12.	5.9	5.2	4.5		
5-17-72	1.2	7.0	37.1	8.	9.	11.	6.8	6.2	4.9		
5-18-72	1.4	6.1	41.8	8.	8.	8.	6.3	6.4	4.7		
5-19-72	1.0	7.2	28.3	8.	8.	4.	7.8	4.5	3.4		
5-20-72	0.0	1.9	11.8	3.	6.	14.	0.0	1.5	0.0		
5-21-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.8	0.0		
TOTAL	6.5	31.4	189.1	42.	44.	53.	33.5	29.8	22.1	12689.	14376.

A - OPERATING DATA SUMMARY

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
5-22-72	1.0	6.8	19.1	6.	6.	11.	5.8	5.2	3.7		
5-23-72	1.6	6.4	39.6	9.	8.	14.	7.1	6.8	6.3		
5-24-72	1.6	7.7	51.2	9.	7.	14.	9.0	5.3	5.6		
5-25-72	1.8	7.5	38.2	8.	9.	9.	7.5	9.0	6.5		
5-26-72	1.0	8.5	35.8	8.	9.	12.	7.1	4.0	4.5		
5-27-72	0.0	0.0	10.9	3.	5.	20.	1.8	1.1	0.0		
5-28-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.7	0.0		
TOTAL	7.0	36.9	194.9	43.	44.	80.	38.3	33.1	26.6	11774.	13366.
5-29-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
5-30-72	0.4	7.9	36.7	6.	8.	7.	7.4	6.2	0.8		
5-31-72	0.0	2.9	53.8	9.	8.	8.	5.6	2.8	0.0		
6- 1-72	1.4	7.4	40.9	7.	9.	5.	8.5	8.4	6.1		
6- 2-72	0.6	10.9	26.3	9.	7.	10.	8.6	7.7	4.0		
6- 3-72	0.0	1.7	20.8	3.	7.	15.	0.0	1.2	0.0		
6- 4-72	0.0	0.0	0.0	0.	0.	0.	0.0	2.3	0.0		
TOTAL	2.4	30.8	178.5	34.	39.	45.	30.1	29.6	10.9	12061.	14881.
6- 5-72	1.6	6.4	22.2	8.	8.	6.	7.8	8.1	4.3		
6- 6-72	0.4	3.9	42.4	9.	4.	9.	5.5	3.7	1.0		
6- 7-72	0.0	3.9	39.5	7.	8.	12.	6.7	8.2	0.0		
6- 8-72	0.0	10.4	46.2	8.	9.	11.	8.5	8.4	0.0		
6- 9-72	0.0	6.0	47.6	8.	8.	3.	7.2	6.1	0.0		
6-10-72	0.0	0.0	12.3	3.	5.	10.	0.0	0.9	0.0		
6-11-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	2.0	30.6	210.1	43.	42.	51.	35.7	36.4	5.3	11545.	14504.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	REAC. (17)	FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
6-12-72	0.0	4.8	15.5	4.	7.	16.	6.1	5.4	0.0		
6-13-72	0.0	7.7	49.1	8.	7.	5.	7.9	7.9	0.0		
6-14-72	0.0	6.8	43.0	7.	8.	8.	7.4	6.7	0.0		
6-15-72	0.0	6.5	43.3	8.	9.	6.	7.3	7.3	0.0		
6-16-72	0.0	6.8	35.0	7.	7.	6.	7.2	5.8	0.0		
6-17-72	0.0	0.0	13.3	3.	5.	8.	0.0	1.3	0.0		
6-18-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.0	0.0		
TOTAL	0.0	32.7	199.1	37.	43.	49.	35.9	35.4	0.0	11251.	13732.
6-19-72	0.0	5.7	14.4	5.	7.	5.	7.0	5.0	0.0		
6-20-72	0.0	5.7	52.5	7.	11.	10.	6.3	8.2	0.0		
6-21-72	0.0	6.9	34.0	6.	9.	6.	7.4	5.6	0.0		
6-22-72	0.0	5.7	44.3	8.	9.	12.	7.3	6.5	0.0		
6-23-72	0.0	4.3	29.4	7.	7.	4.	8.0	4.4	0.0		
6-24-72	0.0	0.0	12.1	3.	5.	12.	0.0	1.5	0.0		
6-25-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.7	0.0		
TOTAL	0.0	28.3	186.7	36.	48.	49.	36.0	32.9	0.0	11351.	12729.
6-26-72	0.0	7.5	18.9	5.	7.	15.	6.4	4.4	0.0		
6-27-72	0.0	5.3	36.8	7.	4.	11.	5.3	5.0	0.0		
6-28-72	0.0	7.8	26.6	7.	5.	3.	7.0	5.5	0.0		
6-29-72	0.0	6.4	40.7	8.	8.	5.	6.2	4.8	0.0		
6-30-72	0.0	7.6	32.5	7.	6.	9.	6.3	2.9	0.0		
7- 1-72	0.0	1.0	11.1	3.	2.	16.	0.0	1.4	0.0		
7- 2-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.6	0.0		
TOTAL	0.0	35.6	166.6	37.	32.	59.	31.2	25.6	0.0	13015.	13658.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES LIC. TRUCKS (13)	NO. OF VEHICLES UNLIC. TRUCKS (14)	NO. OF VEHICLES STD. FEE (15)	OPER.TIME, HOURS HYD. (16)	OPER.TIME, HOURS REAC. (17)	OPER.TIME, HOURS FIBER (18)	REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
7- 3-72	0.0	7.6	22.5	6.	5.	17.	5.8	3.1	0.0		
7- 4-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.9	0.0		
7- 5-72	1.0	5.1	37.1	9.	7.	7.	4.8	4.5	2.0		
7- 6-72	1.3	8.7	41.5	9.	7.	11.	7.1	6.5	3.0		
7- 7-72	0.0	6.3	25.3	7.	4.	14.	5.3	3.7	0.0		
7- 8-72	0.0	0.8	10.4	3.	3.	11.	0.0	1.8	0.0		
7- 9-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.1	0.0		
TOTAL	2.3	28.4	136.8	34.	26.	60.	23.0	22.6	5.0	12102.	15299.
7-10-72	1.0	6.6	23.3	8.	4.	7.	5.4	4.7	1.3		
7-11-72	2.7	5.9	37.3	8.	5.	9.	4.8	3.9	3.2		
7-12-72	1.7	7.6	29.9	7.	6.	4.	8.1	5.6	3.2		
7-13-72	3.0	6.9	35.1	9.	6.	12.	7.0	6.3	4.7		
7-14-72	0.0	6.1	30.6	8.	4.	11.	5.0	3.5	0.0		
7-15-72	0.0	1.0	10.4	3.	2.	11.	0.0	0.7	0.0		
7-16-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.5	0.0		
TOTAL	8.4	34.1	166.6	43.	27.	54.	30.3	26.2	12.4	12715.	14729.
7-17-72	1.2	5.4	24.1	7.	5.	12.	5.4	4.0	1.5		
7-18-72	1.8	4.8	33.7	7.	7.	12.	5.0	5.0	3.4		
7-19-72	2.5	7.5	28.2	7.	5.	8.	5.4	5.2	5.1		
7-20-72	2.1	10.4	25.1	5.	5.	6.	5.9	4.9	3.9		
7-21-72	1.7	2.7	39.7	9.	4.	5.	6.4	3.4	3.3		
7-22-72	0.0	0.8	11.3	3.	2.	17.	0.0	1.0	0.0		
7-23-72	0.0	0.0	0.0	0.	0.	0.	0.0	2.3	0.0		
TOTAL	9.3	31.6	162.1	38.	28.	60.	28.1	25.8	17.2	12566.	15250.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
7-24-72	2.1	6.5	20.4	6.	4.	3.	6.3	4.3	3.8		
7-25-72	1.0	6.6	39.5	7.	5.	14.	5.6	4.1	2.3		
7-26-72	0.9	8.6	33.0	6.	7.	3.	5.9	4.2	2.1		
7-27-72	0.5	11.1	40.0	7.	9.	13.	7.9	7.3	0.7		
7-28-72	0.0	7.0	32.1	7.	6.	9.	5.6	3.6	0.0		
7-29-72	0.0	1.3	10.4	3.	2.	16.	0.0	1.4	0.0		
7-30-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.5	0.0		
TOTAL	4.5	41.1	175.4	36.	33.	58.	31.3	25.4	8.9	13811.	14365.
7-31-72	1.3	5.7	15.9	5.	2.	7.	4.7	4.8	3.2		
8- 1-72	0.7	5.2	28.9	7.	4.	4.	5.0	4.9	1.6		
8- 2-72	0.0	5.6	27.2	7.	3.	7.	5.0	3.8	0.0		
8- 3-72	0.8	7.1	38.7	9.	9.	7.	6.2	4.2	1.3		
8- 4-72	0.5	7.4	29.8	7.	3.	18.	5.0	2.7	1.3		
8- 5-72	0.0	0.3	10.5	3.	2.	11.	0.0	1.5	0.0		
8- 6-72	0.0	0.0	0.0	0.	0.	0.	0.0	1.2	0.0		
TOTAL	3.3	31.3	150.9	38.	23.	54.	25.9	23.1	7.4	13066.	15191.
8- 7-72	1.1	6.0	24.8	7.	4.	11.	5.5	3.2	2.7		
8- 8-72	0.6	4.6	36.0	7.	4.	17.	4.6	2.9	1.2		
8- 9-72	0.0	7.3	32.4	7.	5.	6.	7.0	6.4	0.3		
8-10-72	0.8	6.1	42.2	8.	8.	8.	5.8	3.7	0.9		
8-11-72	0.0	8.5	31.1	8.	7.	10.	8.4	5.0	0.0		
8-12-72	0.0	0.3	8.4	2.	2.	10.	0.0	1.9	0.0		
8-13-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.7	0.0		
TOTAL	2.5	32.8	175.0	39.	30.	62.	31.3	23.8	5.1	14702.	14167.

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DATE	FIBER REC. TONS (10)	TOTAL LNDFIL TONS (11)	REJ. BURNED TONS (12)	NO. OF VEHICLES			OPER.TIME, HOURS			REJ. BURH. LB/HR (12A)	REF. PROC. LB/HR (05A)
				LIC. TRUCKS (13)	UNLIC. TRUCKS (14)	STD. FEE (15)	HYD. (16)	REAC. (17)	FIBER (18)		
8-14-72	0.8	5.9	29.9	7.	7.	11.	5.2	3.0	1.2		
8-15-72	1.0	4.9	26.0	7.	4.	9.	4.3	4.9	2.0		
8-16-72	0.5	6.9	31.1	8.	5.	6.	4.8	3.7	1.7		
8-17-72	0.2	5.4	42.4	8.	7.	8.	6.3	5.0	0.8		
8-18-72	2.1	6.9	27.9	8.	5.	6.	5.5	6.0	3.5		
8-19-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
8-20-72	0.0	0.0	0.0	0.	0.	0.	0.0	0.0	0.0		
TOTAL	4.6	30.1	157.3	38.	28.	40.	26.1	22.6	9.2	13918.	15435.

A - OPERATING DATA SUMMARY

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
04-03-73

WEEK ENDING	CITY WATER		WASTE WATER		ELECTRIC POWER		FUEL OIL	
	METER READING	USE (19)	METER READING	GALLONS (20)	METER READING	KWH (21)	METER READING	GALLONS (22)
6- 6-71	0.	0.E	0.	0.E	0.	0.	0.	0.
6-13-71	0.	103675.E	0.	83525.E	39.	0.	0.	0.
6-20-71	0.	385990.E	0.	310970.E	55.	28800.	0.	0.
6-27-71	0.	638000.E	0.	513999.E	78.	41400.	5520.	5520.
7- 4-71	0.	711369.E	0.	573109.E	95.	30600.	6410.	889.
7-11-71	0.	543894.E	0.	438184.E	116.	37800.	7210.	800.
7-18-71	0.	567819.E	0.	457459.E	141.	45000.	7750.	540.
7-25-71	0.	550275.E	0.	443324.E	161.	36000.	8050.	300.
8- 1-71	0.	537515.E	0.	433045.E	186.	46079.	9710.	1660.
8- 8-71	0.	488069.E	0.	393209.E	210.	42120.	12050.	2340.
8-15-71	0.	492854.E	0.	397064.E	231.	37800.	12600.	550.
8-22-71	0.	704989.E	0.	567969.E	253.	39600.	13190.	590.
8-29-71	0.	743269.E	0.	598810.E	282.	52200.	13960.	770.
9- 5-71	0.	457765.E	0.	368795.E	302.	36000.	14150.	190.
9-12-71	0.	524754.E	0.	422764.E	323.	37800.	15350.	1200.
9-19-71	0.	507209.E	0.	408629.E	343.	36000.	15350.	0.
9-26-71	0.	580579.E	0.	467739.E	343.	0.	16980.	1630.
10- 3-71	0.	748054.E	0.	602664.E	343.	0.	18210.	1230.
10-10-71	0.	759219.E	0.	611660.E	343.	0.	23020.	4810.
10-17-71	0.	593339.E	0.	478019.E	446.	185400.	23260.	240.
10-24-71	0.	483284.E	0.	389355.E	465.	34200.	23730.	470.
10-31-71	0.	566225.E	0.	456174.E	488.	41400.	23746.	16.
11- 7-71	0.	588554.E	0.	474164.E	514.	46800.	24150.	404.
11-14-71	0.	449789.E	0.	362369.E	533.	34200.	25520.	1370.
11-21-71	0.	563034.E	0.	453604.E	558.	45000.	26670.	1150.
11-28-71	0.	445005.E	0.	358515.E	573.	27000.	27510.	840.
12- 5-71	0.	504019.E	0.	406059.E	596.	41400.	27910.	400.
12-12-71	0.	618860.E	0.	498580.E	596.	0.	28940.	1030.
12-19-71	0.	571009.E	0.	460029.E	596.	0.	30210.	1270.
12-26-71	0.	378015.E	0.	304545.E	596.	0.	30930.	720.

CITY OF FRANKLIN

OPERATING DATA TABULATION

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04-03-73

WEEK ENDING	CITY WATER		WASTE WATER		ELECTRIC POWER		FUEL OIL	
	METER READING	USE (19)	METER READING	GALLONS (20)	METER READING	KWH (21)	METER READING	GALLONS (22)
1- 2-72	0.	456169.E	0.	367509.E	656.	108000.	31380.	450.
1- 9-72	0.	571009.E	0.	460029.E	656.	0.	32200.	820.
1-16-72	0.	545489.E	0.	439469.E	656.	0.	32570.	370.
1-23-72	0.	614074.E	0.	494724.E	736.	144000.	33270.	700.
1-30-72	0.	556655.E	0.	448464.E	757.	37800.	33860.	590.
2- 6-72	0.	401940.E	0.	323820.E	776.	34200.	34590.	730.
2-13-72	0.	401940.E	0.	323820.E	793.	30600.	36030.	1440.
2-20-72	0.	472120.E	0.	380360.E	820.	48600.	36280.	250.
2-27-72	0.	488069.E	2054960.	393209.E	836.	28800.	37150.	870.
3- 5-72	0.	583769.E	2589480.	534520.	869.	59400.	37570.	420.
3-12-72	0.	567819.E	3128670.	539190.	883.	25200.	37730.	160.
3-19-72	0.	553464.E	3419140.	290470.	907.	43200.	38160.	430.
3-26-72	0.	630025.E	4071670.	652530.	928.	37800.	38570.	410.
4- 2-72	0.	519969.E	0.	418909.E	947.	34200.	38590.	20.
4- 9-72	0.	794309.E	0.	639929.E	974.	48600.	39306.	716.
4-16-72	0.	1031964.E	0.	831394.E	1006.	57600.	39490.	184.
4-23-72	0.	1070245.E	0.	862235.E	1042.	64800.	39750.	260.
4-30-72	0.	805474.E	0.	648924.E	1071.	52200.	40030.	280.
5- 7-72	87800.	582175.E	0.	469024.E	1092.	37800.	40270.	240.
5-14-72	164120.	572400.	0.	465170.E	1113.	37800.	40480.	210.
5-21-72	223290.	443775.	0.	430474.E	1132.	34200.	40730.	250.
5-28-72	293150.	523950.	0.	492154.E	1156.	43200.	41070.	340.
6- 4-72	393490.	752550.	0.	386784.E	1175.	34200.	41570.	500.
6-11-72	454120.	454725.	0.	458744.E	1196.	37800.	41820.	250.
6-18-72	510190.	420525.	5447051.	461314.E	1217.	37800.	42090.	270.
6-25-72	572740.	469125.	5714961.	267910.	1237.	36000.	42390.	300.
7- 2-72	631330.	439425.	5974301.	259340.	1253.	28800.	42810.	420.
7- 9-72	678610.	354600.	6339091.	364790.	1268.	27000.	42810.	0.
7-16-72	0.	483284.E	0.	389355.E	1268.	0.	43140.	330.
7-23-72	830320.	448194.E	7182761.	361084.E	1312.	79200.	43360.	220.

CITY OF FRANKLIN

OPERATING DATA TABULATION

01890-09
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WEEK ENDING	CITY WATER		WASTE WATER		ELECTRIC POWER		FUEL OIL	
	METER READING	USE (19)	METER READING	GALLONS (20)	METER READING	KWH (21)	METER READING	GALLONS (22)
7-30-72	925830.	716325.	7725501.	542740.	1333.	37800.	44090.	730.
8- 6-72	993070.	504300.	8053551.	328050.	1349.	28800.	44430.	340.
8-13-72	1068000.	561975.	8448142.	394590.	1367.	32400.	44770.	340.

A - OPERATING DATA SUMMARY

B - ANALYTICAL DATA SUMMARY
(16 PAGES)

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                       CITY OF FRANKLIN
                       ---- -- --------                     01890-09
          SOLID WASTE AND FIBER RECOVERY PLANTS             04-03-73
          ----- ----- --- ----- -------- ------
                    TESTING AND EVALUATION
                    ------- --- ----------
                   ANALYTICAL DATA SUMMARY
                   ---------- ---- -------
                   FROM  5/31/71 TO  8/20/72
                   ------------- ----------

                                            MAXIMUM   MINIMUM   AVERAGE    MEDIAN
                                            -------   -------   -------    ------
01.  REFUSE RECEIVED, TONS PER WEEK           409.0       6.6     216.5     226.4
02.  REFUSE PROCESSED, TONS PER WEEK          397.5       6.6     213.0     222.8
03.  REFUSE PROCESSED, LBS. PER HOUR        16346.0    8690.7   12531.3   12651.4
04.  REJECTS BURNED, LBS. PER HOUR          14702.0    6381.9   11097.8   10217.1

     PROXIMATE ANALYSIS, ORGANIC REJECTS
     --------- --------- ------- -------

05.    NO. OF SAMPLES                            45
06.    MOISTURE, PCT. AS RECEIVED             67.80     44.54     52.63     52.49
07.    FIXED CARBON, PCT. AS RECEIVED         11.87      0.13      4.98      4.80
08.    VOLATILE MATTER, PCT. AS RECEIVED      43.86     26.18     37.09     37.52
09.    ASH, PCT. AS RECEIVED                   8.99      2.79      5.28      5.31
10.    HEATING VALUE, BTU/LB, DRY BASIS       9057.     6572.     7642.     7631.

     ULTIMATE ANALYSIS, ORGANIC REJECTS
     -------- --------- ------- -------

11.    NO. OF SAMPLES                            20
12.    CARBON, PCT. AS RECEIVED               33.72     18.00     24.76     23.53
13.    HYDROGEN, PCT. AS RECEIVED              4.75      1.76      2.98      2.86
14.    NITROGEN, PCT. AS RECEIVED             0.129     0.012     0.064     0.075
15.    SULFER, PCT. AS RECEIVED               0.180     0.023     0.091     0.094
16.    OXYGEN, PCT. AS RECEIVED               26.12      1.36     14.12     14.61
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ANALYTICAL DATA SUMMARY

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		MAXIMUM	MINIMUM	AVERAGE	MEDIAN
	SPECIAL ELEMENTS, ORGANIC REJECTS				
	NO. OF SAMPLES	5			
17.	SODIUM, PCT. AS RECEIVED	0.030	0.000	0.006	0.000
18.	SILICA, PCT. AS RECEIVED	0.694	0.000	0.138	0.000
19.	CHLORINE, PCT. AS RECEIVED	0.620	0.148	0.327	0.310
20.	FLUORINE, PCT. AS RECEIVED	0.050	0.022	0.037	0.040
21.	ALUMINUM, PCT. AS RECEIVED	1.100	0.000	0.560	0.760
	ASH ANALYSIS, ORGANIC REJECTS				
	NO. OF SAMPLES	7			
22.	SILICA, PCT. AS RECEIVED	2.760	1.470	2.138	2.200
23.	ALUMINA, PCT. AS RECEIVED	1.230	0.300	0.769	0.820
24.	IRON OXIDE, PCT. AS RECEIVED	0.930	0.130	0.394	0.250
25.	CALCIUM OXIDE, PCT. AS RECEIVED	1.190	0.020	0.338	0.100
26.	MAGNESIUM OXIDE, PCT. AS REC	0.410	0.020	0.198	0.200
27.	SODIUM OXIDE, PCT. AS RECEIVED	0.120	0.010	0.037	0.020
28.	POTASSIUM OXIDE, PCT. AS REC	0.170	0.050	0.085	0.070
29.	ZINC, PCT. AS RECEIVED	0.060	0.005	0.021	0.015
30.	LEAD, PCT. AS RECEIVED	0.050	0.002	0.019	0.015
31.	CHLORIDE, PCT. AS RECEIVED	0.660	0.000	0.175	0.068
32.	SULFATE, PCT. AS RECEIVED	1.650	0.003	1.026	1.390

ANALYTICAL DATA SUMMARY

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		MAXIMUM	MINIMUM	AVERAGE	MEDIAN
	RECIRCULATING WHITEWATER ANALYSIS				
33.	NO. OF SAMPLES	12			
34.	PH	6.91	4.71	5.39	5.27
35.	5-DAY BOD, MG/LITER	12200.	725.	5266.	4100.
36.	TOTAL SOLIDS, MG/LITER	15514.	1650.	10416.	10886.
37.	DISSOLVED SOLIDS, MG/LITER	6560.	580.	4082.	4223.
38.	SUSPENDED SOLIDS, MG/LITER	10965.	1070.	6334.	6861.
39.	SETTLEABLE SOLIDS, MG/LITER	10382.	1313.	6005.	6480.
	WASTE WATER ANALYSIS				
40.	NO. OF SAMPLES	13			
41.	PH	7.39	4.20	5.60	5.50
42.	5-DAY BOD, MG/LITER	6400.	1225.	3973.	4400.
43.	TOTAL SOLIDS, MG/LITER	25559.	4792.	8859.	7366.
44.	DISSOLVED SOLIDS, MG/LITER	5597.	270.	3739.	4016.
45.	SUSPENDED SOLIDS, MG/LITER	19962.	776.	5119.	4429.
46.	SETTLEABLE SOLIDS, MG/LITER	19415.	2205.	5675.	4031.
	ASH WATER ANALYSIS				
47.	NO. OF SAMPLES	12			
48.	PH	10.19	6.50	8.91	8.93
49.	VOLATILE SOLIDS, MG/LITER	2680.	909.	1483.	1464.
50.	TOTAL SOLIDS, MG/LITER	28519.	9301.	14715.	13077.
51.	DISSOLVED SOLIDS, MG/LITER	3718.	2002.	2732.	2762.
52.	SUSPENDED SOLIDS, MG/LITER	24801.	6674.	12438.	10440.
53.	SETTLEABLE SOLIDS, MG/LITER	14697.	6643.	9941.	9623.

ANALYTICAL DATA SUMMARY

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		MAXIMUM	MINIMUM	AVERAGE	MEDIAN
	CYCLONE REJECTS ANALYSIS				
54.	NO. OF SAMPLES	9			
55.	MOISTURE, PERCENT	20.2	0.0	14.6	15.2
56.	ORGANIC, PCT. DRY	16.4	3.1	8.3	8.5
57.	LESS THAN 10 MESH SIZE, PCT. DRY	18.1	8.3	11.6	10.2
58.	RETAINED ON 10 MESH, PCT. DRY	28.4	0.0	19.4	23.9
59.	RETAINED ON 04 MESH, PCT. DRY	69.0	0.0	49.7	62.5
	COMPOSITION				
60.	CLEAR GLASS, PCT. DRY	46.8	32.5	37.9	37.4
61.	GREEN GLASS, PCT. DRY	6.7	1.3	4.2	4.3
62.	AMBER GLASS, PCT. DRY	25.1	12.4	18.1	18.1
63.	TOTAL GLASS, PCT. DRY	72.9	46.2	60.3	63.0
64.	MAGNETIC METALS, PCT. DRY	7.1	1.7	3.6	3.0
65.	ALUMINUM, PCT. DRY	4.6	0.8	2.3	3.0
66.	OTHER METALS, PCT. DRY	1.5	0.0	0.6	0.4
67.	LARGE STONES, PCT. DRY	9.5	0.0	4.8	4.3
68.	UNCLASSIFIED, PCT. DRY	35.9	8.4	21.9	22.1

ANALYTICAL DATA SUMMARY

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		MAXIMUM	MINIMUM	AVERAGE	MEDIAN
	JUNK REMOVER REJECTS ANALYSIS				
69.	NO. OF SAMPLES	6			
	MAGNETIC FRACTION				
70.	WT. OF SAMPLE, LBS	41.05	11.22	21.63	19.73
71.	ALL STEEL CANS, PCT	85.7	50.0	69.1	68.4
72.	STEEL CANS/ALUMINUM TOPS, PCT	10.6	2.3	5.8	4.6
73.	OTHER MAGNETIC MAT'LS, PCT	37.6	9.2	22.8	25.3
	NON-MAGNETIC FRACTION				
74.	WT. OF SAMPLE, LBS.	14.23	11.82	13.26	13.52
75.	MOISTURE, PCT.	13.0	0.0	5.4	4.2
76.	ORGANIC, PCT.	66.3	23.7	42.8	45.4
77.	MAGNETIC MAT'L, PCT.	2.8	0.0	1.1	0.9
78.	ALUMINUM, PCT.	10.6	3.0	7.5	8.6
79.	OTHER METALS, PCT.	11.1	1.3	5.4	5.1
80.	GLASS, PCT.	39.3	7.4	25.1	27.3
81.	RUBBER, PCT.	11.6	2.8	7.8	8.0
82.	PLASTICS, PCT.	5.5	0.8	3.8	4.3
83.	UNCLASSIFIED, PCT.	1.3	0.0	0.5	0.3

CITY OF FRANKLIN

ANALYTICAL DATA TABULATION

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ORGANIC REJECTS ANALYSIS

DATE	SAMPLE DESIGNATION	PROXIMATE ANALYSIS, PCT. AS RECEIVED (06) MOISTURE	(07) FIXED CARBON	(08) VOLATILE MATTER	(09) ASH	(10) BTU (DRY)
8-30-71	W	44.54	6.23	43.86	5.37	7713.
8-30-71	X	44.86	6.49	43.34	5.31	7729.
8-30-71	Y	52.53	5.61	37.49	4.37	7472.
9- 9-71	Z	49.51	4.87	39.09	6.53	7185.
9- 9-71	AA	49.66	8.61	38.10	3.65	7470.
9- 9-71	AB	51.09	6.08	37.34	5.19	7177.
9-24-71	AC	49.99	4.70	38.71	6.60	7192.
9-24-71	AD	56.53	4.71	33.09	5.67	7122.
9-30-71	AE	54.17	5.41	33.59	6.83	7437.
9-30-71	AF	56.26	5.61	32.77	5.36	7303.
9-30-71	AG	51.89	3.92	38.42	5.76	7016.
10- 7-71	AH	47.07	3.30	40.64	8.99	6900.
10- 7-71	AI	52.49	3.81	37.46	6.24	7306.
10- 7-71	AJ	44.90	4.70	43.31	7.09	7127.
10-14-71	AK	52.58	11.87	31.33	4.22	8016.
10-14-71	AL	57.19	0.13	39.10	3.58	6775.
10-14-71	AM	49.08	7.32	39.39	4.21	9057.
10-12-71	1	49.37	6.45	40.14	4.04	7886.
10-13-71	3	67.80	3.23	26.18	2.79	7160.
10-13-71	4	65.10	3.38	28.62	2.90	8020.
10-13-71	5	51.23	5.94	37.52	5.31	7121.
10-14-71	13	57.35	4.96	33.40	4.29	7550.
10-14-71	20	52.02	5.63	37.29	5.06	6846.
10-14-71	21	52.02	5.63	37.29	5.06	6846.
10-29-71	AN	47.08	5.44	41.37	6.11	7631.

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DATE	SAMPLE DESIGNATION	(06) MOISTURE	(07) FIXED CARBON	(08) VOLATILE MATTER	(09) ASH	(10) BTU (DRY)
10-29-71	AO	50.56	4.80	39.54	5.10	8281.
10-29-71	AP	53.79	4.04	36.32	5.85	8553.
11- 5-71	AQ	53.53	3.61	39.19	3.67	8195.
11- 5-71	AR	52.59	4.59	38.66	4.16	8160.
11-16-71	AS	53.76	3.90	35.45	6.89	7855.
11-16-71	AT	50.05	5.91	37.66	6.38	8359.
11-16-71	AU	51.80	4.19	37.86	6.15	7983.
11-16-71	AV	55.00	4.47	35.91	4.62	8262.
1- 4-72	AW	52.31	4.51	37.99	5.19	8793.
1- 4-72	AX	53.86	5.08	37.49	3.57	8026.
1- 4-72	AY	54.36	4.98	36.03	4.63	8345.
1-25-72	AZ	51.84	4.03	38.41	5.72	8058.
2-11-72	BA	52.19	4.70	38.33	4.78	7741.
3- 7-72	BB	54.15	1.66	38.29	5.90	8077.
4-10-72	BC	52.80	4.95	37.34	4.91	7411.
4-18-72	BD	54.17	4.16	35.82	5.85	6572.
5- 9-72	BE	59.90	4.32	31.08	4.70	7152.
6-21-72	BF	46.30	5.60	40.50	7.63	7508.
7-18-72	BG	53.05	5.97	35.25	5.73	7662.
8-15-72	BH	56.28	4.70	33.12	5.90	7867.

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ORGANIC REJECTS ANALYSIS

ULTIMATE ANALYSIS PCT. AS RECEIVED

DATA	SAMPLE DESIGNATION	(12) CARBON	(13) HYDROGEN	(14) NITROGEN	(15) SULFUR	(16) OXYGEN
8-30-71	W	21.75	2.04	0.082	0.096	26.12
9- 9-71	Z	21.82	3.52	0.045	0.050	18.52
9- 9-71	AA	27.31	4.75	0.075	0.096	14.46
9-24-71	AC	20.41	1.76	0.105	0.075	21.06
10- 7-71	AH	20.54	3.40	0.074	0.138	19.79
10- 7-71	AJ	24.62	4.55	0.104	0.121	18.62
10-12-71	1	30.63	2.75	0.107	0.122	12.98
10-13-71	3	27.68	3.02	0.048	0.023	1.36
10-13-71	4	25.76	3.50	0.129	0.094	2.52
10-13-71	5	33.72	2.68	0.088	0.063	6.91
10-14-71	13	29.56	3.76	0.107	0.162	4.77
10-14-71	20	31.41	1.95	0.081	0.057	9.42
10-14-71	21	31.41	1.95	0.081	0.057	9.42
11-16-71	AT	20.41	3.06	0.075	0.105	19.92
1- 4-72	AW	19.84	2.47	0.012	0.130	20.05
1- 4-72	AX	20.79	2.73	0.012	0.061	18.98
1- 4-72	AY	25.94	3.47	0.012	0.032	11.56
3- 7-72	BB	22.45	2.76	0.023	0.180	14.54
5- 9-72	BE	18.00	2.67	0.012	0.024	14.69
7-18-72	BG	21.30	2.96	0.020	0.150	16.80

01890-09
04-03-73

ORGANIC REJECTS ANALYSIS

SPECIAL ELEMENTS

DATE	SAMPLE DESIGNATION	(17) SODIUM	(18) SILICA	(19) CHLORINE	(20) FLUORINE	(21) ALUMINUM
1- 4-72	AX	0.00	0.00	0.62	0.05	1.10
1- 4-72	AY	0.00	0.00	0.35	0.05	0.79
3- 7-72	BB	0.00	0.69	0.31	0.04	0.76
5- 9-72	BE	0.00	0.00	0.14	0.02	0.15
7-18-72	BG	0.03	0.00	0.21	0.02	0.00

01890-09
04-03-73

ORGANIC REJECTS ANALYSIS

ASH ANALYSIS, PCT. OF AS RECEIVED SAMPLE

DATE	DESIG	(22) SIO2	(23) AL2O3	(24) FE2O3	(25) CAO	(26) MGO	(27) NA2O	(28) K2O	(29) ZINC	(30) LEAD	(31) CL2	(32) SO4
10- 7-71	AJ	2.71	0.680	0.930	0.770	0.270	0.040	0.080	0.060	0.050	0.660	0.840
11-16-71	AT	2.20	0.950	0.640	1.190	0.410	0.120	0.070	0.030	0.040	0.340	0.390
1- 4-72	AX	1.47	1.230	0.250	0.090	0.190	0.020	0.090	0.005	0.002	0.058	1.650
1- 4-72	AY	1.78	0.840	0.230	0.040	0.100	0.010	0.050	0.015	0.010	0.095	1.390
3- 7-72	BB	2.76	0.820	0.340	0.100	0.200	0.010	0.070	0.009	0.005	0.068	1.420
5- 9-72	BE	1.63	0.300	0.130	0.020	0.020	0.020	0.070	0.007	0.018	0.011	1.490
7-18-72	BG	2.42	0.570	0.240	0.160	0.200	0.040	0.170	0.024	0.015	0.000	0.003

01890-09
04-03-73

ORGANIC REJECTS ANALYSIS

ASH ANALYSIS, PCT. OF ASH

DATE	DESIG	(22A) SIO2	(23A) AL2O3	(24A) FE2O3	(25A) CAO	(26A) MGO	(27A) NA2O	(28A) K2O	(29A) ZINC	(30A) LEAD	(31A) CL2	(32A) SO4
10- 7-71	AJ	38.22	9.59	13.11	10.86	3.80	0.564	1.128	0.846	0.705	9.308	11.84
11-16-71	AT	34.48	14.89	10.03	18.65	6.42	1.880	1.097	0.470	0.626	5.329	6.11
1- 4-72	AX	41.17	34.45	7.00	2.52	5.32	0.560	2.521	0.140	0.056	1.624	46.21
1- 4-72	AY	38.44	18.14	4.96	0.86	2.15	0.215	1.079	0.323	0.215	2.051	30.02
3- 7-72	BB	46.77	13.89	5.76	1.69	3.38	0.169	1.186	0.152	0.084	1.152	24.06
5- 9-72	BE	34.68	6.38	2.76	0.42	0.42	0.425	1.489	0.148	0.382	0.234	31.70
7-18-72	BG	42.23	9.94	4.18	2.79	3.49	0.698	2.966	0.418	0.261	0.000	0.05

CITY OF FRANKLIN

ANALYTICAL DATA TABULATION

01890-09
04-03-73

RECIRCULATED WHITEWATER ANALYSIS MG/L.

DATE	(34) PH	(35) 5-DAY BOD	(36) TOTAL SOLIDS	(37) DISSOLVED SOLIDS	(38) SUSPENDED SOLIDS	(39) SETTLEABLE SOLIDS
11-16-71	5.41	3370.	13652.	6408.	7244.	300.*
9-30-71	4.71	4400.	7366.	3112.	4254.	0.*
1-19-72	6.91	725.	1650.	580.	1070.	210.*
2-11-72	4.73	7300.	8692.	6560.	2132.	300.*
3- 1-72	5.40	3800.	15294.	5131.	10163.	270.*
3-23-72	5.20	3275.	14432.	3897.	10535.	9324.
4-10-72	5.71	850.	3113.	1126.	1987.	1313.
5- 9-72	5.22	9200.	10056.	3090.	6966.	2451.
5-23-72	5.76	2825.	13726.	5957.	7769.	7167.
6-21-72	5.16	9600.	15514.	4549.	10965.	10382.
7-18-72	5.22	5650.	11717.	4960.	6757.	6480.
8-15-72	5.34	12200.	9788.	3618.	6170.	4920.

* THESE VALUES REPORTED AS ML/L. AND ARE NOT INCLUDED IN SUMMARY CALCULATIONS.

CITY OF FRANKLIN

ANALYTICAL DATA TABULATION

01890-09
04-03-73

WASTEWATER ANALYSIS MG/L.

DATE	(41) PH	(42) 5-DAY BOD	(43) TOTAL SOLIDS	(44) DISSOLVED SOLIDS	(45) SUSPENDED SOLIDS	(46) SETTLEABLE SOLIDS
11-16-71	6.18	3100.	4792.	4016.	776.	9.*
9-30-71	4.71	4400.	7366.	3112.	4254.	0.*
1-19-72	7.39	1700.	5430.	270.	5160.	85.*
2-11-72	4.20	6050.	7888.	5296.	2592.	77.*
3- 1-72	6.10	2175.	6969.	4716.	2253.	35.*
3-23-72	5.50	1225.	6890.	2040.	4850.	4398.
4-10-72	5.07	3150.	5936.	2048.	3888.	4260.
4-18-72	6.06	2650.	8935.	4506.	4429.	2917.
5- 9-72	5.20	5150.	7820.	3244.	4576.	2913.
5-23-72	6.30	4700.	25559.	5597.	19962.	19415.
6-21-72	4.70	6400.	12082.	5552.	6530.	5492.
7-18-72	5.25	5700.	7158.	4405.	2753.	2205.
8-15-72	6.23	5250.	8346.	3810.	4536.	3802.

* THESE VALUES REPORTED AS ML/L. AND ARE NOT INCLUDED IN SUMMARY CALCULATIONS.

CITY OF FRANKLIN

ANALYTICAL DATA TABULATION

01890-09
04-03-73

RECIRCULATED ASHWATER ANALYSIS MG/L.

DATE	(48) PH	(49) VOLATILE SOLIDS	(50) TOTAL SOLIDS	(51) DISSOLVED SOLIDS	(52) SUSPENDED SOLIDS	(53) SETTLEABLE SOLIDS
8-18-71	9.30	1448.	11922.	2960.	15410.	28.*
11-16-71	10.19	1098.	19432.	2244.	16856.	10.*
9-30-71	8.70	1066.	9301.	2108.	9520.	150.*
1-19-72	6.50	1184.	16398.	2700.	10728.	30.*
2-11-72	7.89	1513.	13268.	3568.	9700.	24.*
3- 7-72	8.65	2680.	20997.	3049.	17948.	25.*
4-10-72	8.82	909.	9367.	2202.	7165.	7793.
5- 9-72	9.45	1710.	13176.	2303.	10873.	11267.
5-23-72	9.81	2119.	28519.	3718.	24801.	14697.
6-21-72	10.13	1006.	11435.	2002.	9433.	9389.
7-18-72	8.48	1481.	12978.	2825.	10153.	9857.
8-15-72	9.04	1584.	9788.	3114.	6674.	6643.

* THESE VALUES REPORTED AS ML/L. AND ARE NOT INCLUDED IN SUMMARY CALCULATIONS.

CITY OF FRANKLIN

ANALYTICAL DATA TABULATION

01890-09
04-03-73

CYCLONE REJECTS ANALYSIS PCT. DRY

DATE	(55)	(56)	(57)	(58)	(59)	(60)	(61)	(62)	(63)	(64)	(65)	(66)	(67)	(68)	(68A)
			SIZING			CLR.	GRN.	AMB.	TOT.	MAG.		OTHR	LRG.		
COLLECTED	H2O	ORG.	-10	+10	+4	GLS.	GLS.	GLS.	GLS.	MET.	AL	MET.	STN.	UNCL	UNACC.
9-30-71	0.0	10.3	18.1	0.0	0.0	33.8	2.6	13.7	50.1	2.8	1.0	0.0	9.1	8.4	28.6
10-14-71	18.9	16.4	8.9	0.0	0.0	32.5	1.3	12.4	46.2	5.8	4.6	0.0	9.5	8.6	25.3
1-19-72	15.5	4.2	10.2	27.8	62.5	37.4	4.3	22.4	64.1	3.0	2.0	1.0	6.2	22.1	1.6
1-25-72	14.4	5.4	12.7	26.1	61.5	37.1	4.5	25.1	66.7	2.7	2.0	0.3	6.8	21.5	0.0
3- 1-72	15.2	8.5	10.0	28.4	62.0	40.9	5.9	18.0	64.8	4.1	3.0	1.1	0.9	25.6	0.5
5- 2-72	13.0	13.6	13.2	24.3	62.5	38.1	4.3	14.7	57.1	3.1	2.9	1.0	0.0	35.9	0.0
6- 8-72	14.9	10.1	14.5	23.0	62.5	34.5	4.1	19.5	58.1	7.1	2.3	0.4	3.7	28.4	0.0
7- 6-72	20.2	3.9	8.3	23.9	67.8	40.1	4.8	18.1	63.0	2.3	3.0	0.2	4.3	26.9	0.3
8- 2-72	19.6	3.1	9.4	21.6	69.0	46.8	6.7	19.4	72.9	1.7	0.8	1.5	3.1	20.0	0.0

CITY OF FRANKLIN

ANALYTICAL DATA TABULATION

01890-09
04-03-73

JUNK REMOVER REJECTS PCT. AS RECEIVED

DATE COLLECTED	MAGNETIC FRACTION					NON-MAGNETIC FRACTION									
	(70) WT. LBS.	(71) STL. CANS	(72) W/AL TOPS	(73) OTHR MAG.	(73A) UNACC.	(74) WT. LBS.	(75) H2O	(76) ORG.	(77) MAG. MET.	(78) AL	(79) OTHR MET.	(80) GLS.	(81) RUBR	(82) PLST	(83) UNCL
2-17-72	21.0	85.7	2.3	9.2	2.8	14.2	0.0	50.8	1.5	10.6	6.0	12.7	11.6	5.5	1.3
3-23-72	15.7	75.0	10.5	12.5	2.0	13.8	11.6	25.5	0.6	3.0	7.5	39.3	8.0	4.2	0.3
5- 2-72	41.0	67.6	2.4	27.4	2.6	14.1	0.0	66.3	0.8	10.2	2.5	7.4	8.0	4.4	0.4
6- 8-72	22.3	67.1	3.5	26.4	3.0	12.3	8.4	42.4	2.8	9.6	1.3	23.2	7.4	4.9	0.0
7- 6-72	18.4	69.3	5.7	24.3	0.7	13.2	0.0	48.5	1.1	4.4	4.2	37.0	2.8	0.8	1.2
8- 2-72	11.2	50.0	10.6	37.6	1.8	11.8	13.0	23.7	0.0	7.7	11.1	31.5	9.4	3.6	0.0

Parameter						Sand analysis	
						New sand	
Source	Clean	Reactor	Reactor	Reactor	Reactor	Reactor	Reactor
Date of sample	11/18/72	10/1/71	11/18/72	1/19/72	2/11/72	4/10/72	5/23/72
% passing							
3/8" sieve	100.0	100.0	100.0	99.0	100.0	100	100
No. 4 sieve	100.0	98.0	92.64	89.0	97	98	97
No. 5 sieve	-	97.0	-	84.0	95	97	96
No. 6 sieve	-	96.0	-	78.0	92	96	94
No. 8 sieve	100.0	94.0	82.23	69.0	85	94	90
No. 10 sieve	-	93.0	-	65.0	80	93	88
No. 12 sieve	-	91.0	-	60.0	73	92	85
No. 16 sieve	-	88.0	-	49.0	55	88	78
No. 20 sieve	94.04	82.0	62.08	36.0	34	78	65
No. 30 sieve	65.85	70.0	51.16	23.0	17	50	52
No. 40 sieve	20.71	44.0	33.09	13.0	7	22	31
No. 50 sieve	13.83	14.0	9.68	3.0	1	4	6
No. 60 sieve	-	5.0	-	1.0	1	1	2
No. 70 sieve	4.14	2.0	1.18	0.5	-	0.8	1
No. 80 sieve	-	0.8	-	0.4	-	0.3	0.7
No. 100 sieve	0.81	0.6	0.25	0.4	-	-	0.6
No. 140 sieve	-	0.5	-	0.3	-	-	0.4
No. 200 sieve	-	0.5	-	-	-	-	0.4
No. 270 sieve	0.09	0.3	0.16	-	-	-	0.3
No. 325 sieve	0.09	0.3	0.08	-	-	-	0.3
SiO_2, % by wt.	94.67	-	70.76	64.4	63.0	76.4	77.76
Loss on ignition	0.20	-	0.16	-	-	-	-
Moisture	0.73	-	0.37	-	-	-	-
Sulfur	0.006	-	0.033	-	-	-	-
P_2O_5	0.014	-	0.316	-	-	-	-
CaO	0.42	-	8.68	-	-	-	-
MgO	0.07	-	12.93	-	-	-	-
Fe_2O_3	0.54	-	2.12	-	-	-	-
Al_2O_3	0.38	-	4.91	-	-	-	-

C. GRAPHIC REPRESENTATION OF TESTING RESULTS

The graphs on the following pages have been prepared from the data compiled and tabulated in the foregoing sections.

The only specific trends that can be noted from these graphs are:

1. The waste loads are higher during the summer months than during the winter months, (See Figure 1) and conversely:

2. The heating value of the organic rejects tends to be higher in the winter months than during the summer months. One of the reasons for this may be the increased paper content of the solid waste received during the winter months.

The graphs of the analytical data indicated that while the number of samples of organic rejects collected during the early stages of the evaluation period were more than adequate, more frequent sampling of the various plant waters, cyclone rejects, and junk remover rejects were needed. The sampling schedule was revised to obtain a more equitable balance between the items sampled.

The following specific comments are offered:

Figure 1. Waste Load Variation

The extremely high peak experienced during April, 1972, was due to material received from outside the normal collection area.

Figure 2. Rejects To Landfill

Note that the liquid cyclone rejects make up the largest part of this stream. Also, the rapid variation of the nonprocessible materials is due to somewhat erratic handling and recording of the materials and not to variations in the characteristics of the solid waste received.

Figure 3. Reusuable Paper Fiber Recovered

The variation shown here reflects the frequent shutdown periods and partial operation of the fiber recovery system as changes in equipment and operating procedures were made in an attempt to increase the fiber yield.

Figure 4. Proximate Analysis

Note the variation of the heating value with the seasons, while the other constituents remain relatively constant. This is deemed to be due to changes in paper content. With the fiber recovery system operating to its maximum advantage, this variation would not be so pronounced.

Figure 5. pH of Various Plant Waters

The rise in ash water pH is due to a proprietary chemical added to the scrubber water to prevent the ash from agglomerating into large lumps.

Figure 6. Settleable Solids

The results of the analyses for this type of solids were at first reported on a volumetric basis. Since there is no correlation between these results and the tests for other solids, this test was changed to determine these solids on a gravimetric basis as shown in Figure 6a.

Figures 7 through 10.

In all the tests on the various plant waters, the widely varying results reflect the effect of different percentages of water to waste. An optimum blowdown rate was not determined.

Figure 11. Total Solids in Ash Slurry

The wide variation shown here is again due to variation in water flow. The amount of ash discharged was relatively constant. The plant operators had no reliable means of determining the amount of water being used to carry this ash to waste.

Figure 12. Junk Remover Rejects Non-Magnetic Fraction

The wide variation in the organic content points up the changes in washing operations, and the changes in glass content are probably due to changes in the grinding ability of the Hydrapulper.

Figure 13. Cyclone Rejects Analysis

The variation shown here is due primarily to changes in the organic content, rather than being due to changes in the glass constituents.

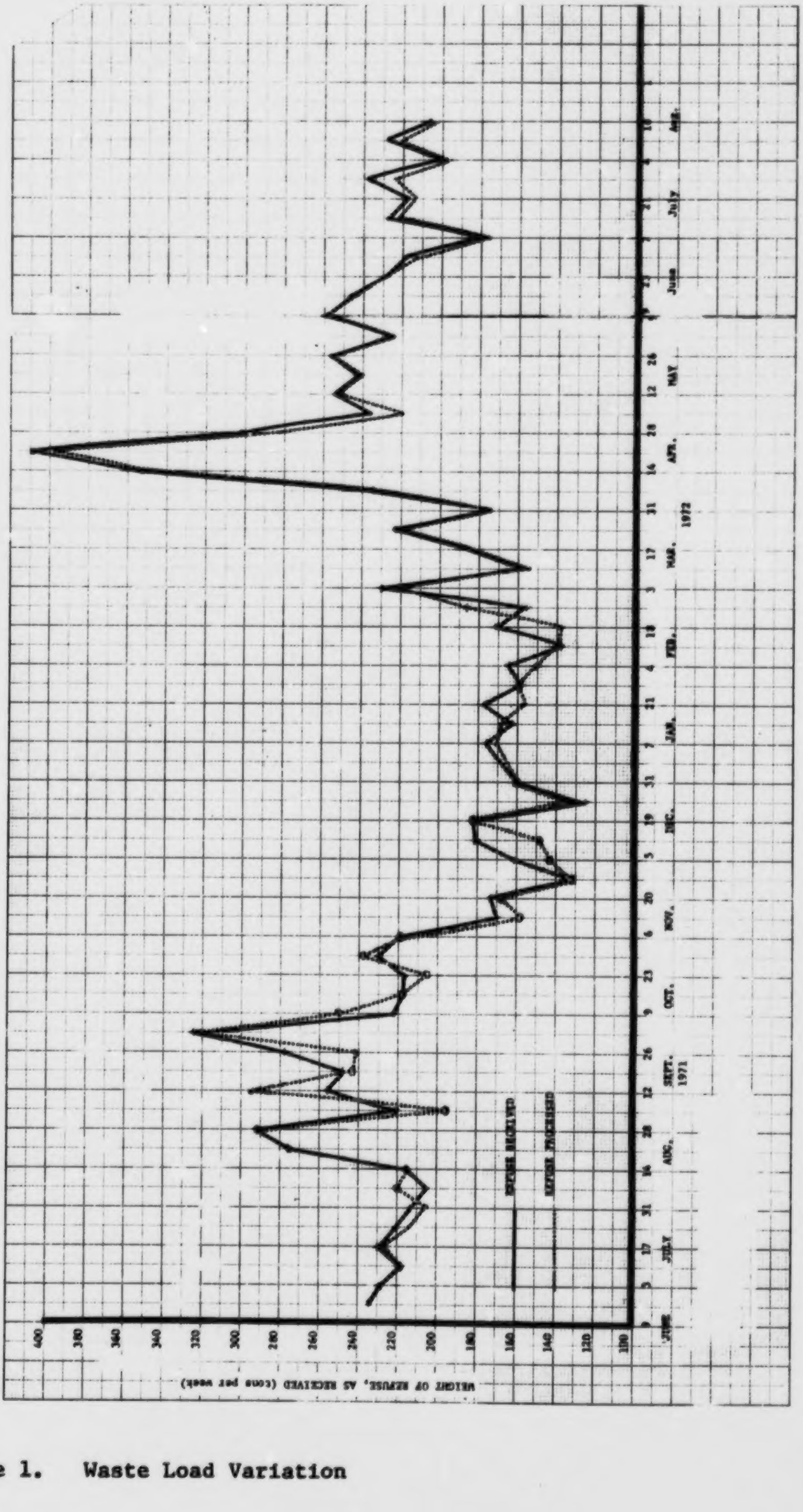


Figure 1. Waste Load Variation

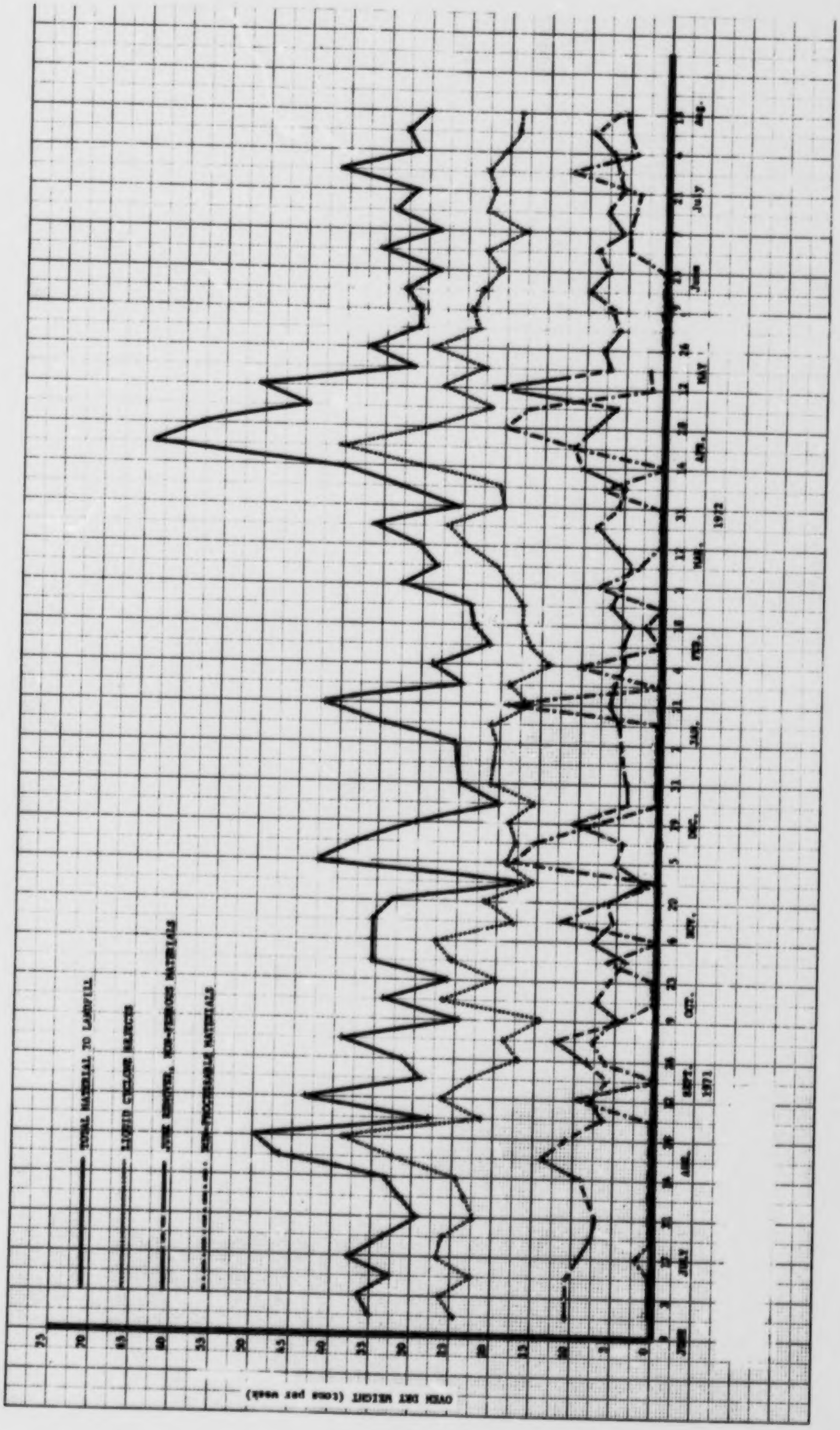


Figure 2. Rejects to Landfill

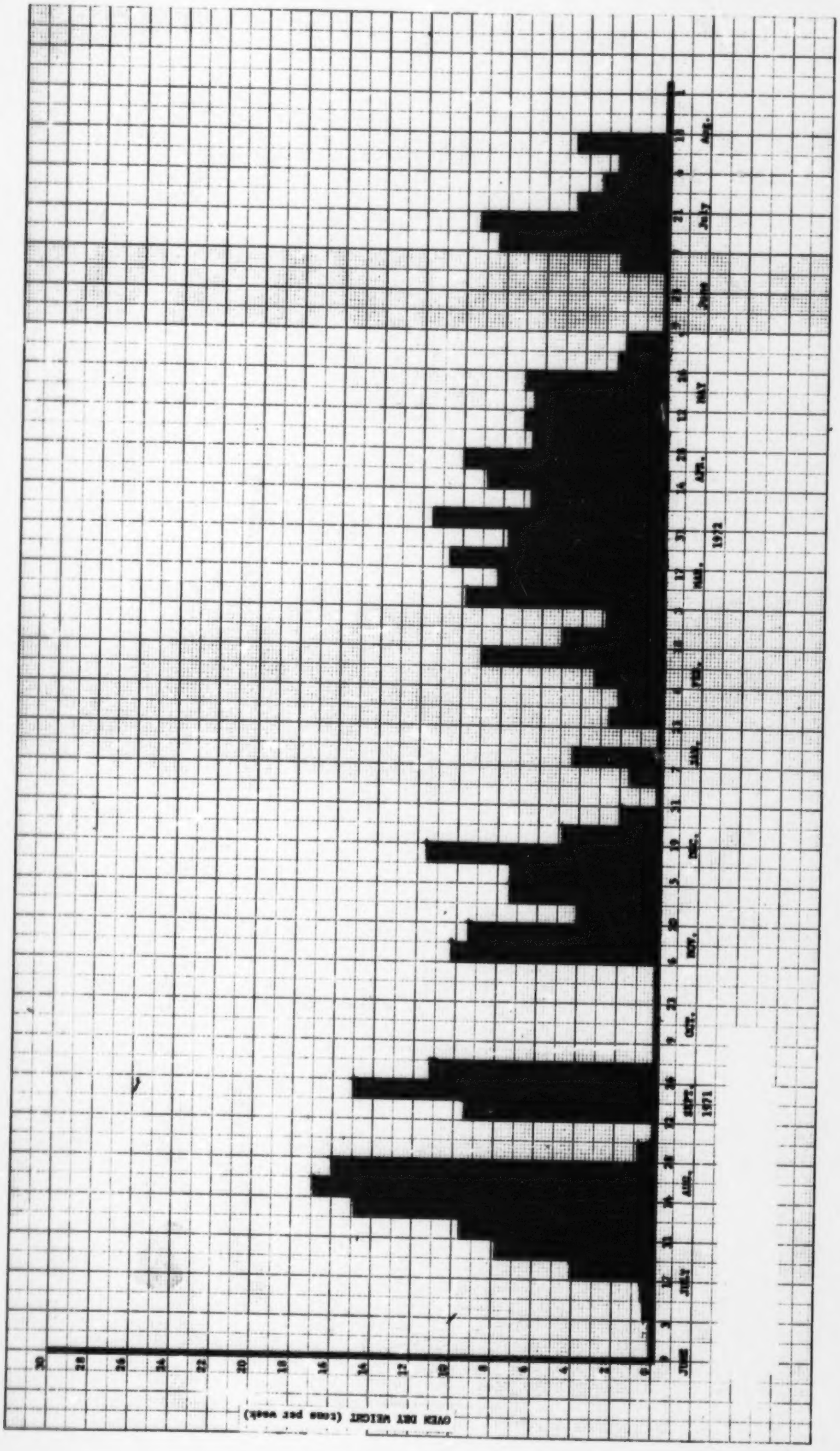


Figure 3. Reusable Paper Fiber Recovered

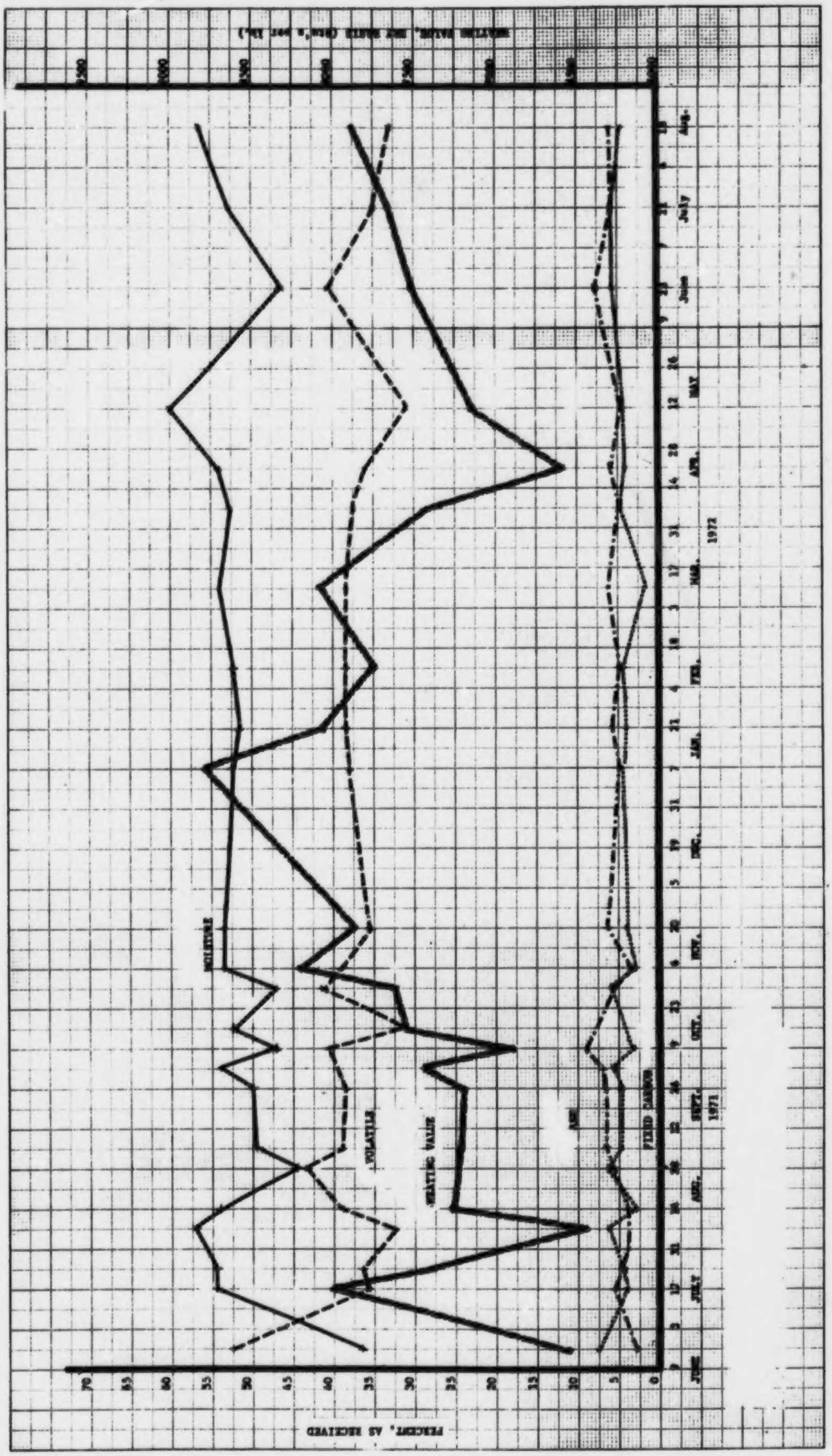


Figure 4. Proximate Analysis of Reactor Feed

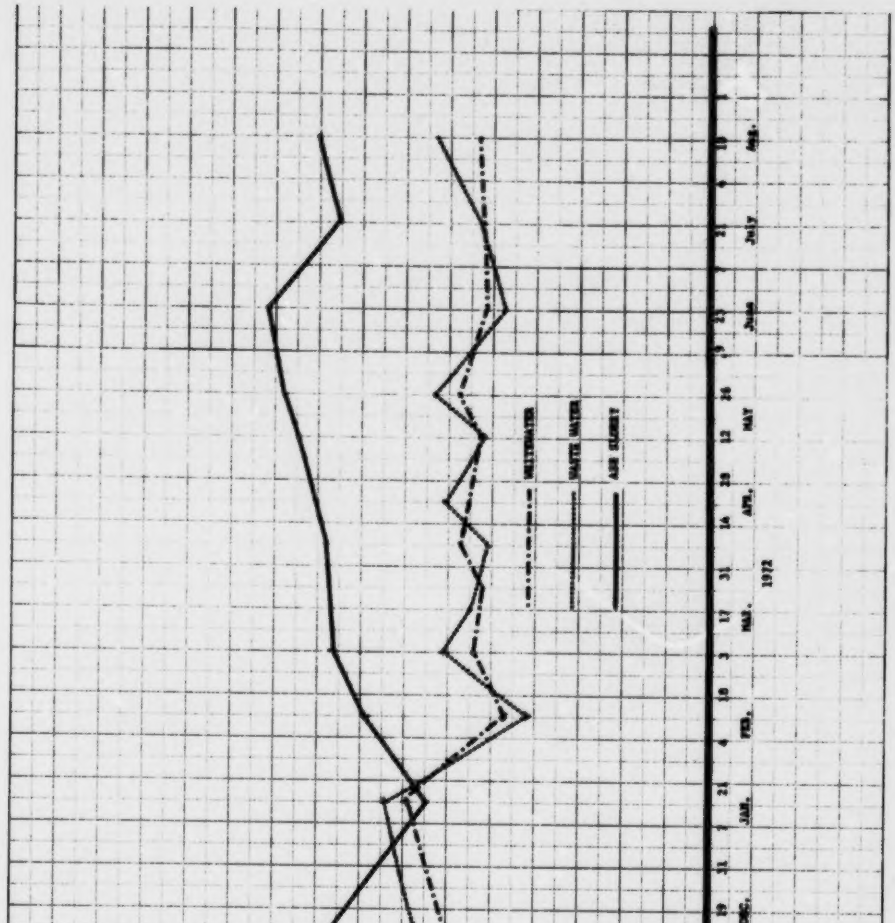


Figure 5. pH Various Plant Waters

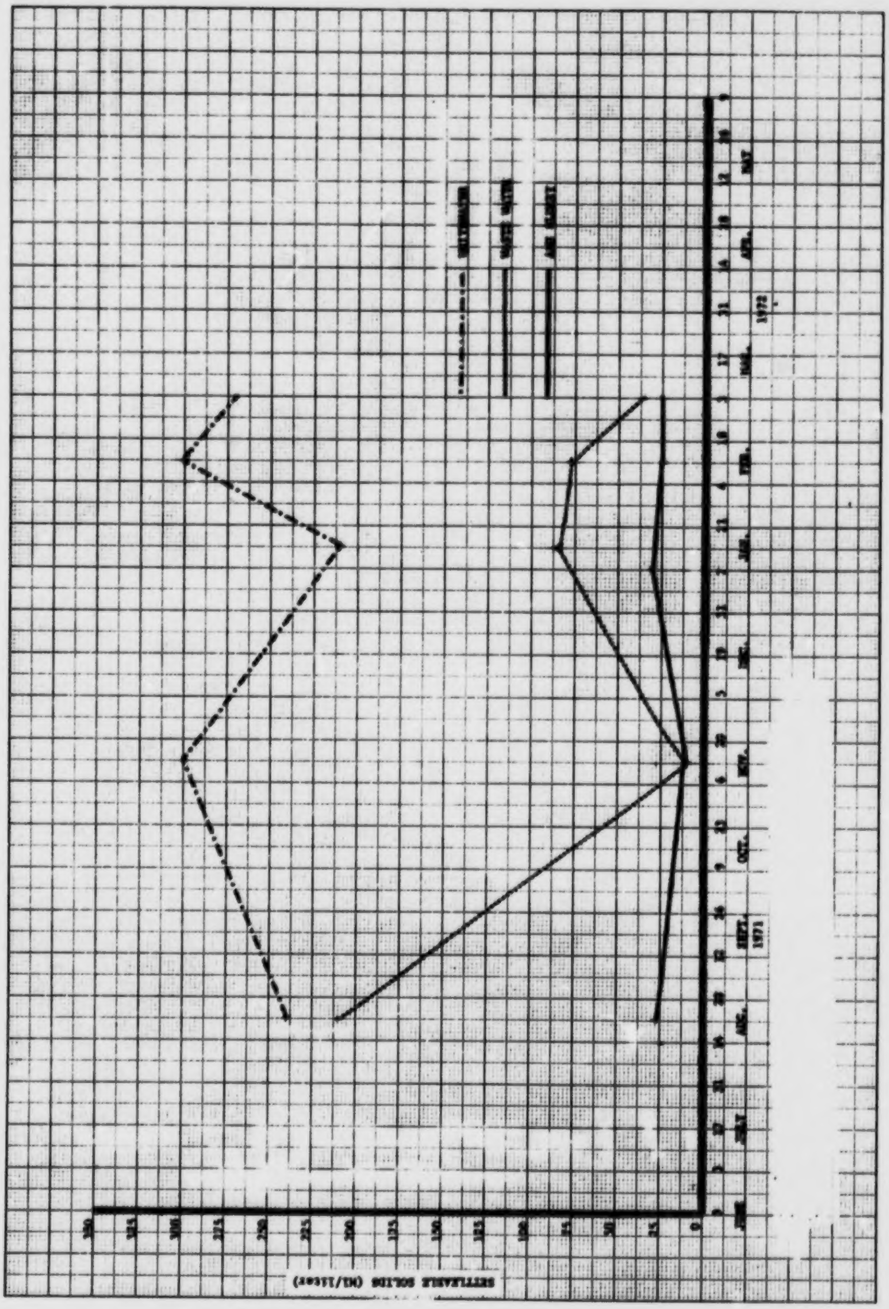


Figure 6. Settleable Solids in Various Plant Waters (By Volume)

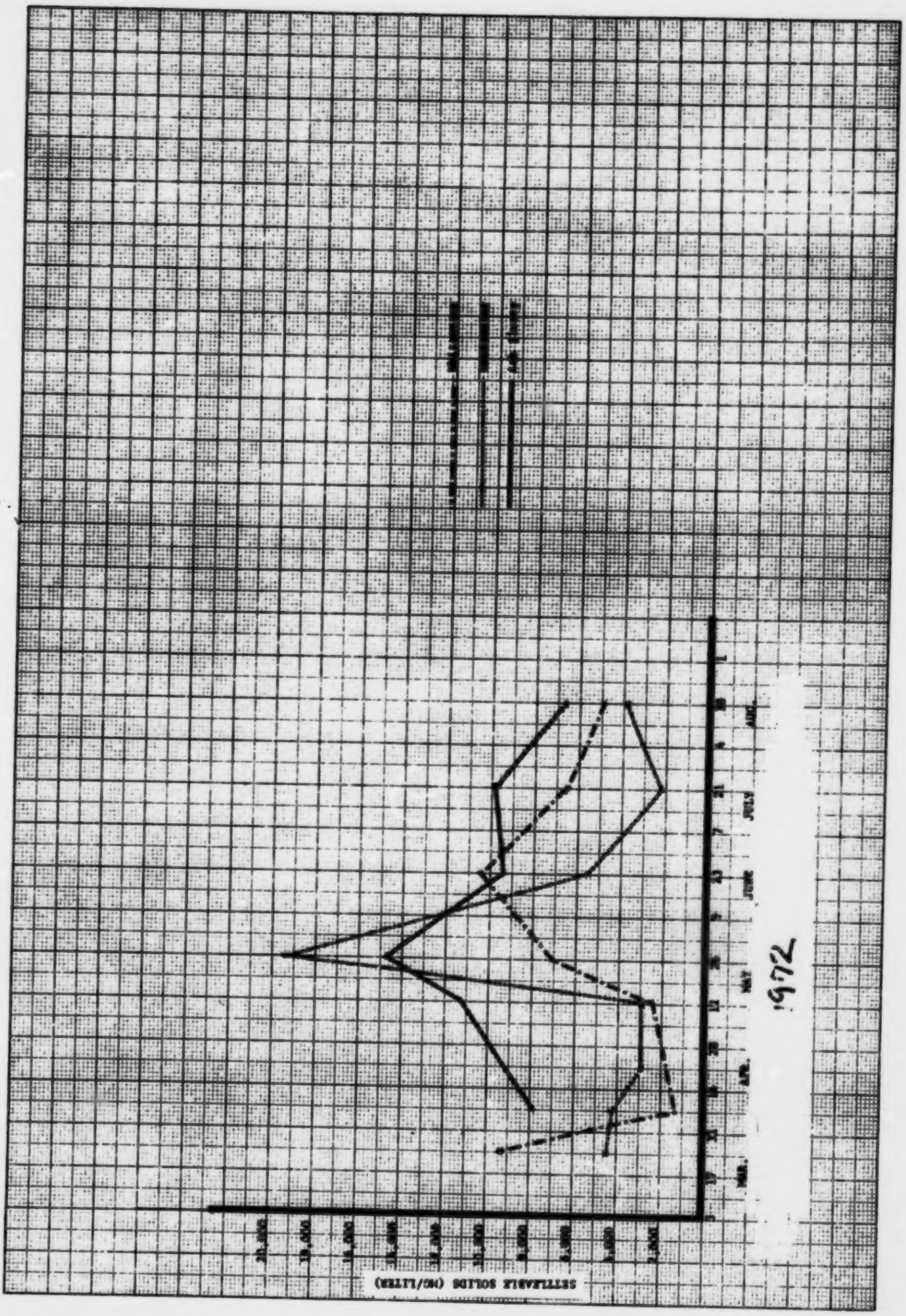


Figure 6a. Settleable Solids in Various Plant Waters (By Weight)

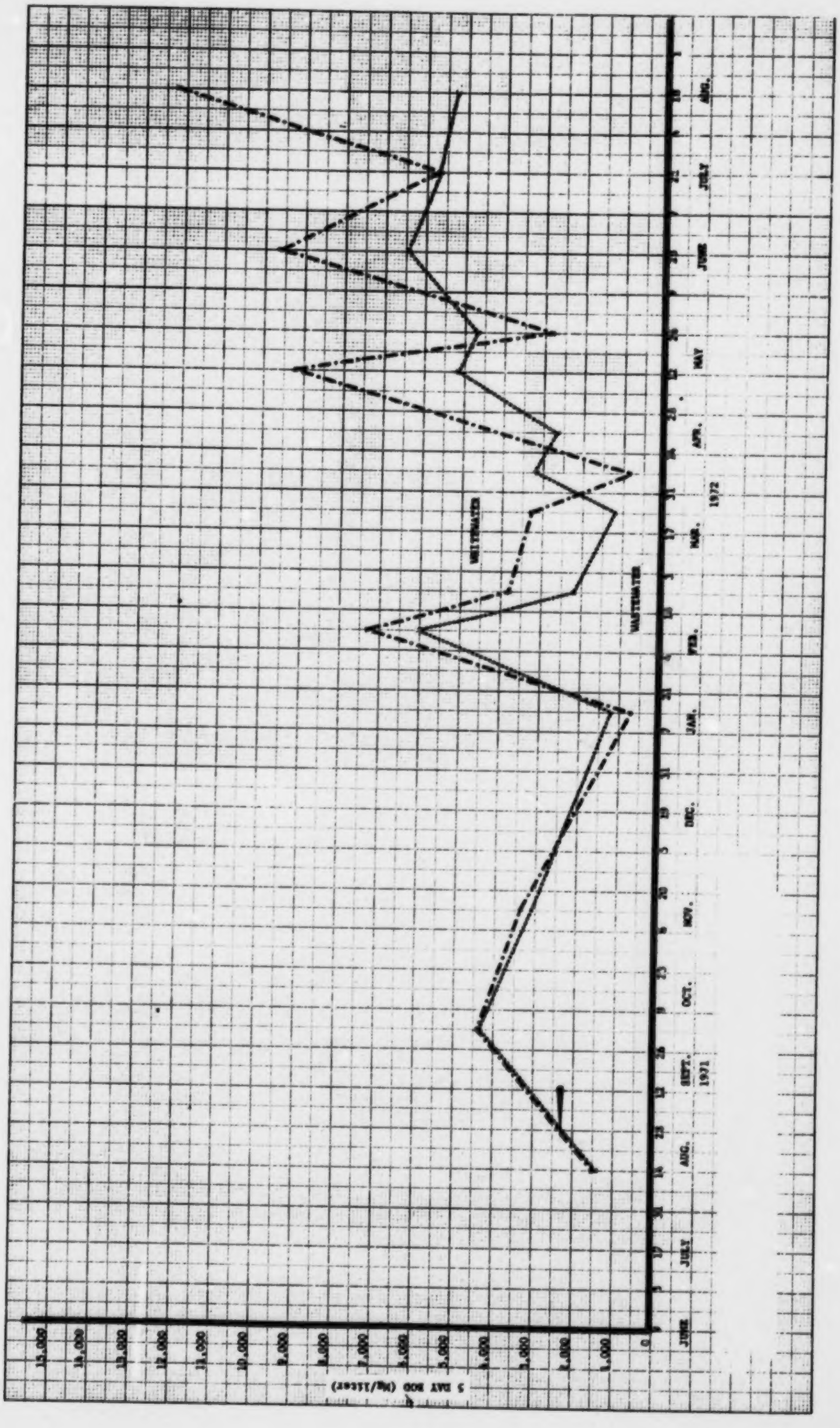


Figure 7. Biochemical Oxygen Demand of Various Plant Waters

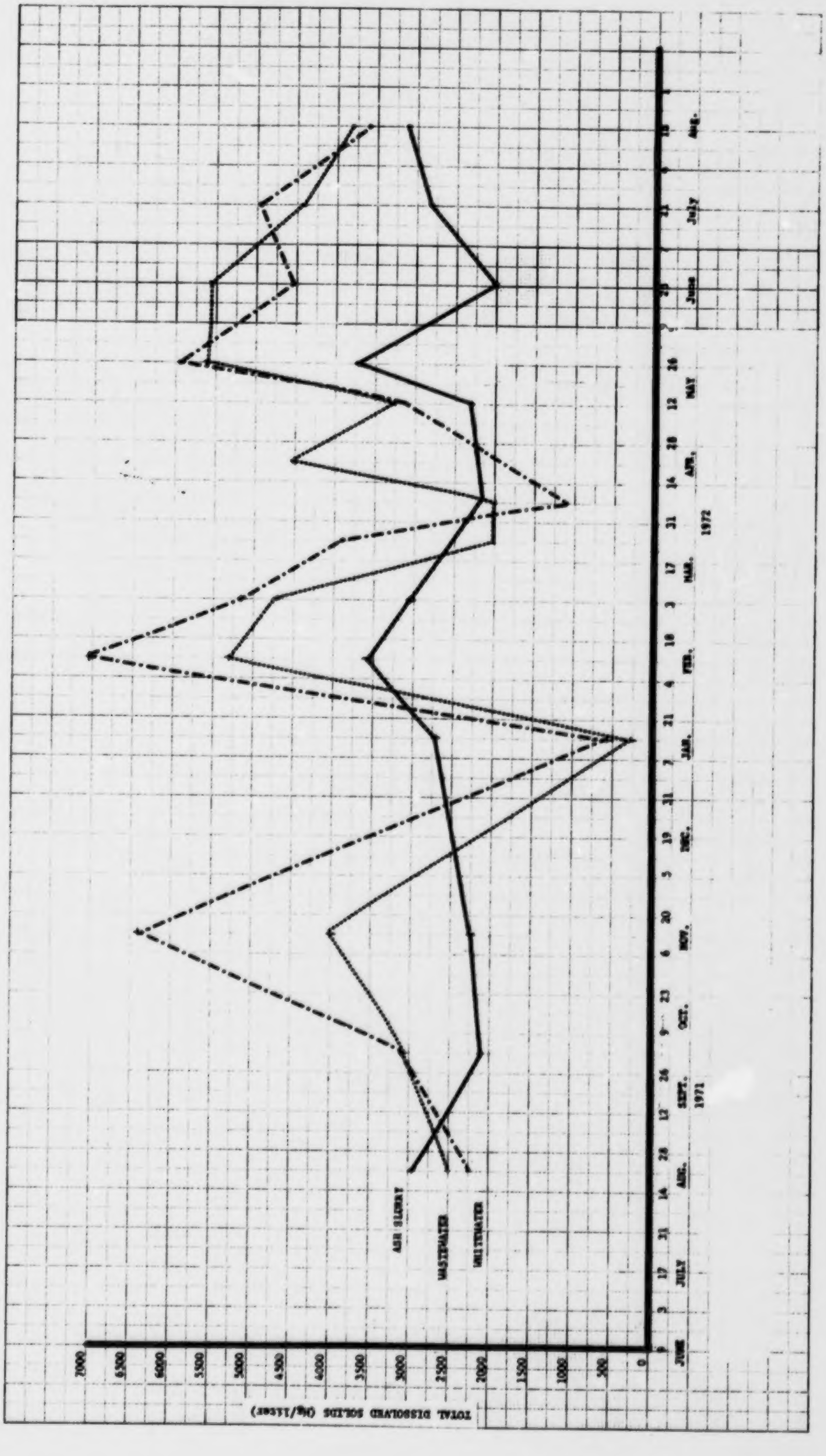


Figure 8. Total Dissolved Solids in Various Plant Waters

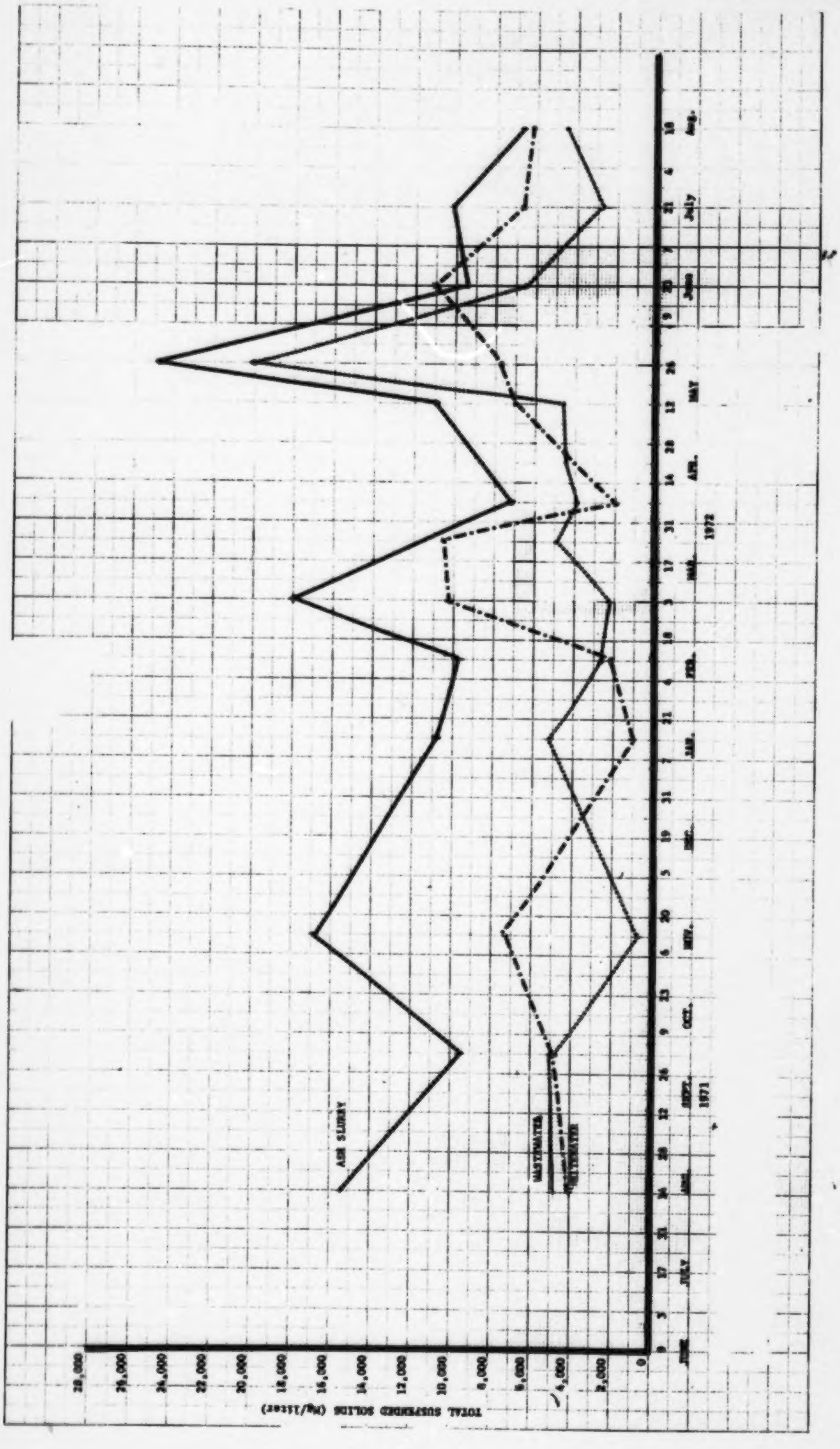


Figure 9. Total Suspended Solids in Various Plant Waters

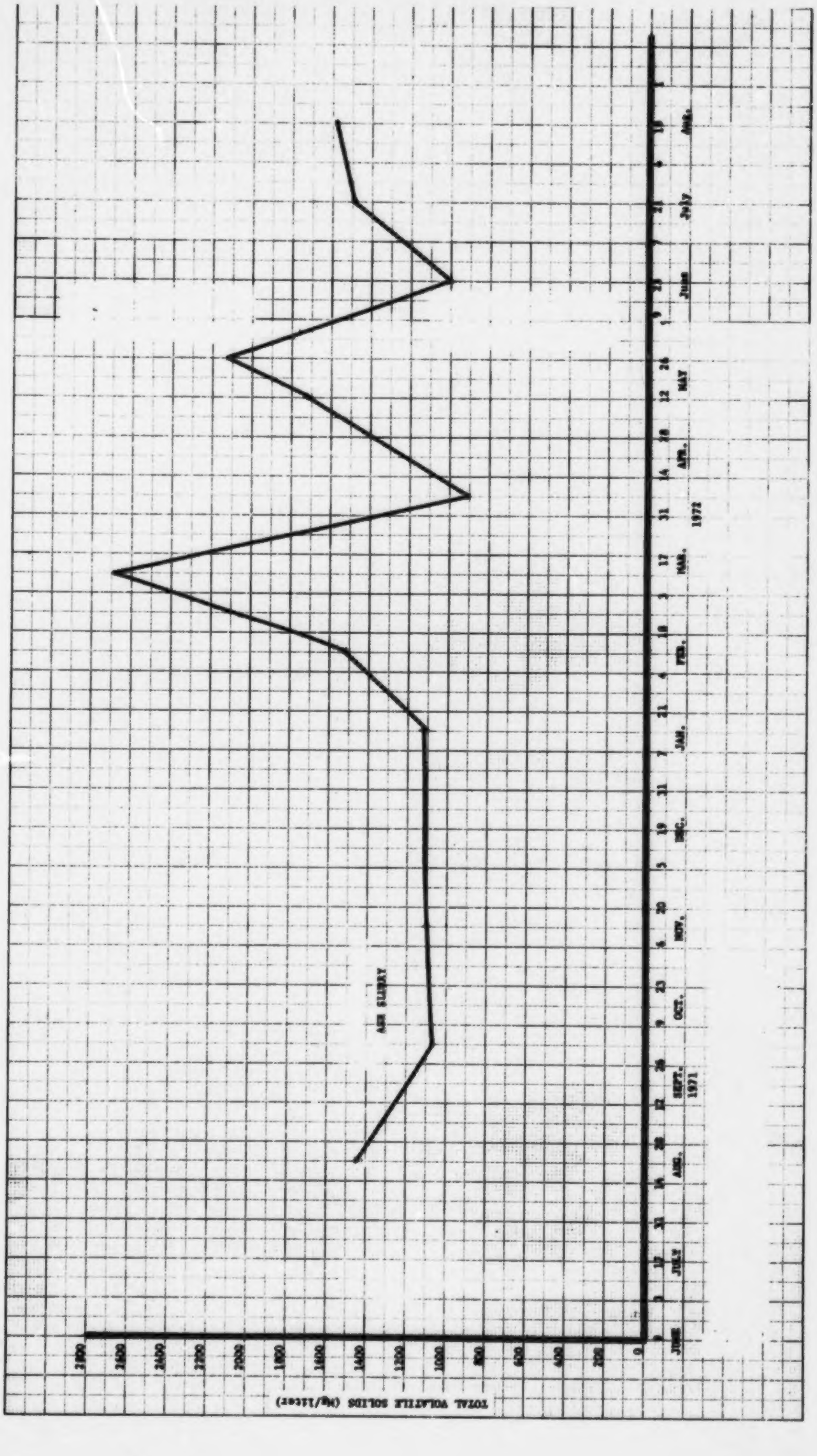


Figure 10. Total Volatile Solids in Ash Slurry

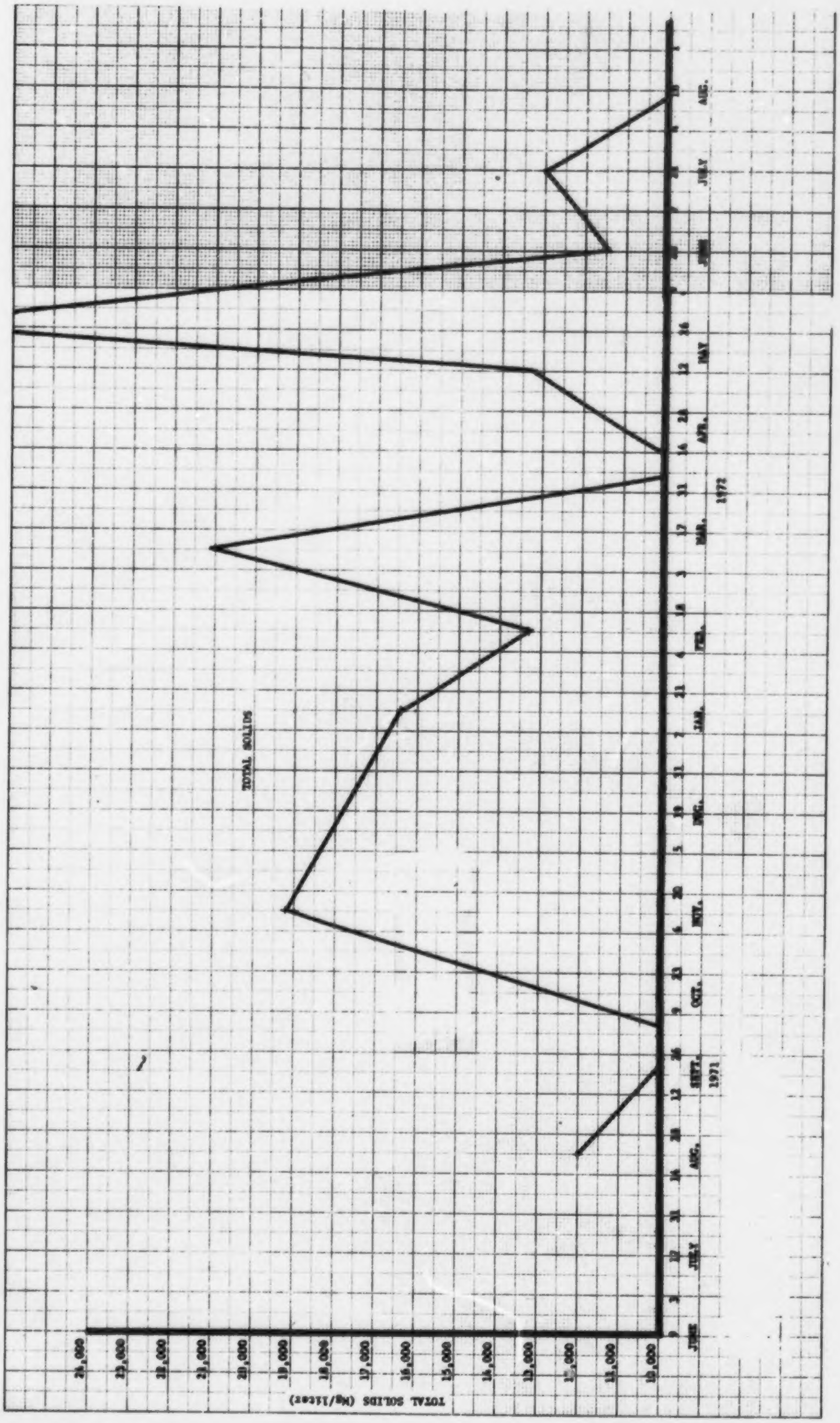


Figure 11. Total Solids in Ash Slurry

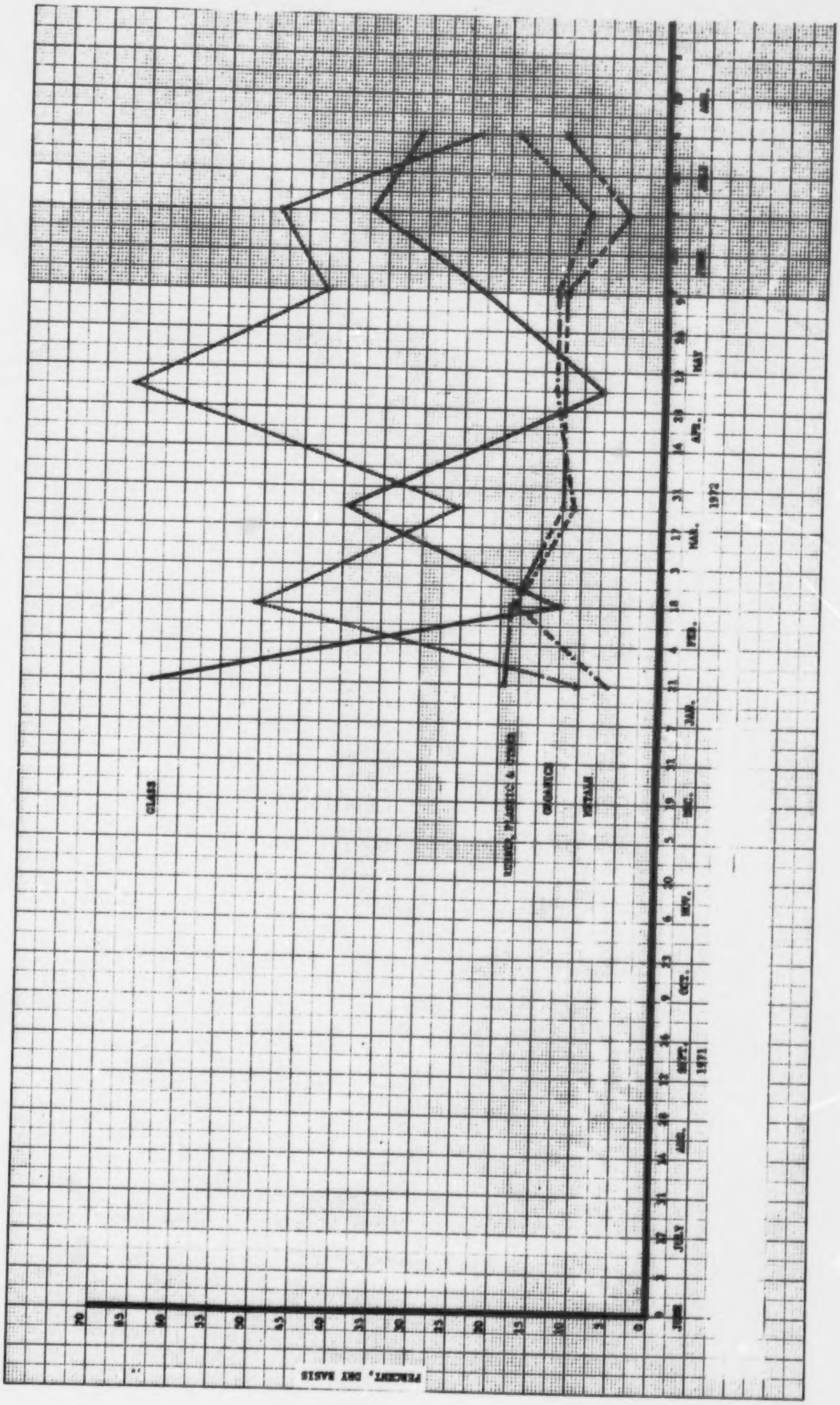


Figure 12. Junk Remover Rejects Non-Magnetic Fraction

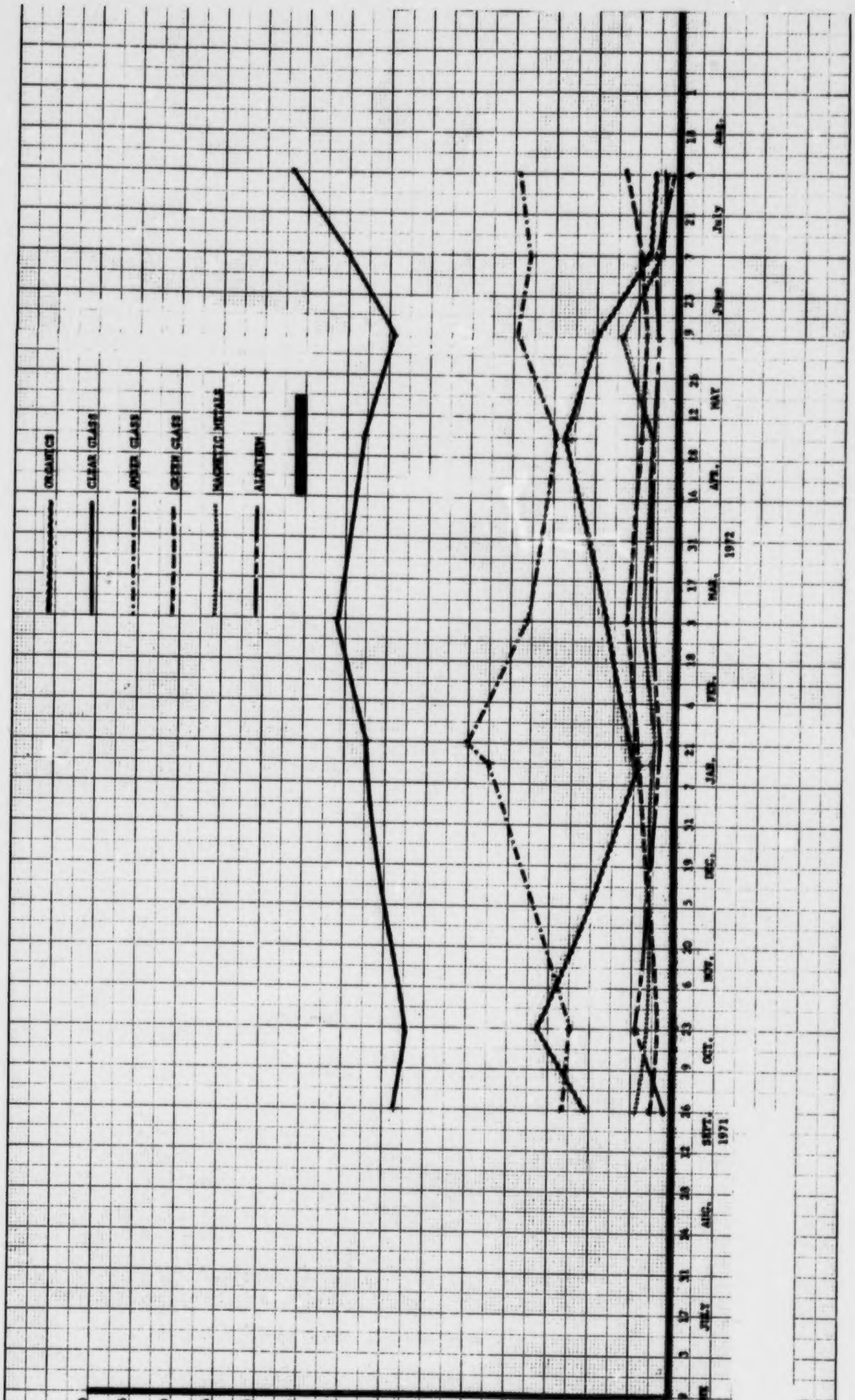


Figure 13. Cyclone Rejects Analysis

D. SAMPLING, TESTING, AND ANALYTICAL PROCEDURES

1. General. A representative of A. M. Kinney, Inc., visited the plant site approximately once a week to obtain operating data and to collect for analysis samples of the input and output streams.

2. Operating Data. Operating data were tabulated by Black Clawson personnel on daily log sheets and summarized on weekly log sheets.

These data were then fed to a computer programmed by A. M. Kinney, Inc., personnel to:

Tabulate the data
Calculate other information based thereon
Summarize the calculated information for the evaluation period

A print-out of this computerized information is presented in Heading A of this report.

3. Sampling Procedures. So-called "grab" samples were taken of the input and output streams when plant operating conditions appeared to be stable. Samples were taken on different days of the week, and at different times of the day to minimize the possibility of biased sampling; e.g., when only one type of refuse was being processed at the plant.

Samples were collected in plastic bags, plastic bottles, or metal tubs, depending on the stream being sampled; and were of sufficient size to insure a representative portion of the stream at the time sampled. These samples were then thoroughly mixed and reduced at the laboratory, using standard sample reduction methods where applicable to obtain a volume suitable for analysis.

The following is a list of the streams sampled; location of the sample point, and the total number of samples analyzed during the evaluation:

Stream	Sample Point	No. of Samples
Organic rejects to reactor	Inlet to pneumatic conveyor	68
Junk remover rejects		
Magnetic	Discharge of magnetic separator	6
Nonmagnetic	Discharge of conveyor belt	6
Cyclone rejects	Discharge of screw conveyor following liquid cyclone	9
Waste water	Discharge of waste water sump pump	13
White water	Discharge of white water sump pump	12
Ash slurry	Outlet of ash discharge pump	12
Reactor bed sand	Sand discharge nozzle on reactor	7

Raw refuse input and nonprocessible rejects were not sampled, but were photographed and a semiqualitative listing of their components was made. The reactor bed sand analysis was not included in the computer program.

4. Testing Laboratory Analytical Procedures. The samples of organic rejects, waste water, white water, ash slurry, and reactor bed sand were analyzed by Bowser-Morner Testing Laboratories, Inc., in Dayton, Ohio, using standard procedures published by American Society for Testing and Materials (ASTM) American Public Works Association (APWA) and Scotts' Standard Methods for Waste and Waste Water, 13th edition, 1971. For reference to specific procedures see the Bowser-Morner Reports included in Appendix A, Volume II.

A. M. Kinney, Inc., personnel reviewed each laboratory report for accuracy and for meaningful results, and occasionally requested changes to make these results more meaningful.

The samples of junk remover rejects were analyzed by A. M. Kinney, Inc., personnel in A. M. Kinney, Inc., laboratories, using procedures developed specifically for this evaluation. The details of these procedures are given on the following pages.

All analytical data were tabulated and summarized by a computer. A computer print-out of these data are included under Heading B of this section and are graphically shown on charts presented under Heading A of this section.

5. A. M. Kinney, Inc., Laboratory Testing Procedures.

a. Liquid Cyclone Rejects.

(1) Moisture Determination

(a) Weigh out approximately 300 to 400 grams of wet sample into previously tared pan.

(b) Place in drying oven for approximately 24 hours at 200 F. Stir sample occasionally to insure complete drying.

(c) Calculations.

Weight wet sample and pan
Tare weight of pan
Wet sample weight
Weight dry sample and pan

$$\text{\% Moist.} = \frac{\text{Wt. Wet Sample and Pan} - \text{Wt. Dry Sample and Pan}}{\text{Wet Sample Wt.}} \times 100$$

(2) Organics.

(a) Use dried sample obtained above. Weigh out approximately 100 gram sample into porcelain dish. Heat at 750 F (400 C) for two hours.

(3) Size Consist.

(a) Pass remainder of dried sample of (1) above successively through a No. 4 sieve and No. 10 sieve.

(b) Record weight retained on No. 4, that retained on No. 10, and that passed by No. 10 sieves.

(c) Calculate percentage that each portion is of the total sample.

(4) Physical Composition.

(a) Hand sort material retained on each sieve into the following fractions:

Clear glass
Green glass
Amber glass
Magnetic metals
Aluminum
Other metals
Large stones
Miscellaneous materials

Weigh each fraction and calculate its percentage of total sample.

b. Junk Remover Rejects.

(1) Magnetic Fraction.

(a) Weigh sample.

(b) Hand sort into following categories:

All-steel cans
Steel cans with aluminum tops
Other - identify if possible.

(c) Weigh each fraction and report as a percent of total magnetic fraction.

(d) Photograph-sorted samples.

(2) Nonmagnetic Fraction.

(a) Moisture Determination. Run two samples in conformance with cyclone rejects procedure. Report average moisture as a percent of the nonmagnetic fraction.

(b) Organic Determination. Use portion of one of dried samples obtained above and process in conformance with cyclone rejects procedure.

(c) Hand sort remaining dry sample into following fractions:

Magnetic metals
Aluminum
Other metals
Glass
Rubber materials
Plastics
Other - identify if possible

Weigh each fraction and calculate its percentage of nonmagnetic sample.

APPENDIX A - BOWSER-MORNER REPORTS
(60 PAGES)

27*

LABORATORY REPORT

August 28, 1972

Report to: A.M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio
Attn: Mr. Carl Miller

Laboratory No. 765208
Authorization:

Report on: One Sample of Refuse Submitted for Complete Chemical Analysis

The following sample was received from Mr. Wayne Okel by BOWSER-MORNER on July 18, 1972. This sample has the following identification and required analysis:

Bag "BG" for Proximate, Ultimate and Ash Analysis

The analyses were performed in accordance with ASTM Procedure D-271 (Part 19), 1971 Edition; American Public Works Association for Refuse, Appendix A; and Standard Methods for Water and Wastewater, 13th Edition, 1971. A discussion of the actual procedures used was included in our Report No. 759640 (April 14, 1972). The references for the required analysis are as follows.

Proximate:

Parameter	Reference
Moisture	ASTM-D-271 (Section 8)
Ash	ASTM D-271 (Section 11)
Volatiles	ASTM D-271 (Section 14)
Fixed Carbon	ASTM D-271 (Section 17)
BTU/lb.	ASTM D-271 (Sections 44-47)

Ultimate:

Carbon	APWA, Appendix A, Page 399
Hydrogen	APWA, Appendix A, Page 399
Nitrogen	ASTM D-271 (Sections 38-40)
Sulfur	ASTM D-271 (Sections 22-23)
Fluorine	Orion Selective Ion Electrode
Chlorine	ASTM D-271 (Sections 3-6)
Acid Soluble Aluminum	Perkin-Elmer A.A. Handbook
Na_2O	Perkin-Elmer A.A. Handbook

Ash Analysis:

SiO_2	Wet Chemical Method
Al_2O_3	Perkin-Elmer A.A. Handbook
Fe_2O_3	Perkin-Elmer A.A. Handbook
CaO	Perkin-Elmer A.A. Handbook
MgO	Perkin-Elmer A.A. Handbook

(continued)

Na_2O	Perkin-Elmer A.A. Handbook
K_2O	Perkin-Elmer A.A. Handbook
Sulfate	Turbidometric Titration with $BaCl_2$
Lead	Perkin-Elmer A.A. Handbook
Zinc	Perkin-Elmer A.A. Handbook
Ash Fusion	Ash Fusion Combustion Furnace

The sample was prepared by placing a portion of the wet sample in a beaker and drying it at 75°C to determine the moisture content. The dried sample was then placed in a blender and emulsified as fine as possible. This homogeneous sample was then placed back in the oven and redried at 75°C. All of the remaining analyses were performed using the dried sample. The results of these analyses are as follows:

Proximate Analysis	Bag "BG"
Moisture, %	53.05
Ash, %	5.73
Volatiles, %	35.25
Fixed Carbon, %	5.97
BTU/lb. (1st Trial)	7662
BTU/lb. (2nd Trial)	7662
BTU/lb. (Average)	7662
Ultimate Analysis	
Carbon, %	45.47
Hydrogen, %	6.31
Oxygen, %	Rem
Nitrogen, %	.041
Sulfur, %	.33
Chlorine, %	.45
Fluorine, %	.001
Na_2O, %	.06
Acid Soluble Al as Al_2O_3, %	.71

(continued)

Ash Analysis	**Bag "BG"**
Al_2O_3, %	.57
SiO_2, %	2.42
Fe_2O_3, %	.24
CaO, %	.16
MgO, %	.26
Na_2O, %	.04
K_2O, %	.17
Zinc, %	.024
Lead, %	.015
Sulfates, %	.003

Ash Fusion

Initial Deformation	2700°F
Softening Temperature	2830°F
Fluid Temperature	2900°F +

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser
Clyde W. Kayser
Chemist, Instrumentation Laboratory
Chem-Met Division

3- Client
2- File
CWK/jmb

26*

LABORATORY REPORT

August 24, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Laboratory No. 765028
Authorization:

Report on: Five (5) Samples Submitted for Chemical Analysis

Four water samples and one reactor sand sample were received from Mr. Wayne Okel on August 15, 1972. These samples have the following identifications and required analysis.

Ash Water (8-15-72) for	pH Total Solids Volatile Solids Dissolved Solids Settleable Solids
White Water (8-15-72) for	pH 5 Day BOD Total Solids Volatile Solids Dissolved Solids Settleable Solids
Waste Water (8-15-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
Clarifier Water (8-15-72) for	pH 5 Day BOD Total Solids Volatile Solids Dissolved Solids Settleable Solids
Reactor Sand (8-15-72) for	Sieve Analysis Silica Content

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewaters, 13th Edition, 1971. The sieve analysis of the reactor sand was obtained using procedures in accordance with ASTM (D-1140), Volume 11, 1970 Edition. The silica content of the reactor sand was obtained using a wet chemical filtration method. The results of these analyses are as follows.

(continued)

Water Analysis:

	Ash Water 8-15-72	White Water 8-15-72	Waste Water 8-15-72	Clarifier Water 8-15-72
pH	9.04	5.34	6.23	6.84
5 Day BOD, mg/l	-	12200	5250	13700
Total Solids, mg/l	9788	9059	8346	5235
Volatile Solids, mg/l	1584	5302	-	3700
Dissolved Solids, mg/l	3114	3618	3810	2352
Settleable Solids, mg/l	6643	4920	3802	2653

Reactor Sand:

	Reactor Sand 8-15-72
SiO_2	69.28%

Sieve Analysis:

Sieve Number, US	Weight Sand Retained (grams)	% Sand Passing
3/4	0	100
1/2	9	99
3/8	10	99
4	53	96
5	82	94
6	119	91
8	206	84
10	253	81
16	463	64
30	849	35
40	1084	17
50	1272	2
100	1298	0.2
200	1299	0.1

Sample Weight = 1300 grams

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Laboratory
Chem-Met Division

3- Client
2- File
CWK/jm

LABORATORY REPORT

August 16, 1972

Report to: A. M. Kinney Inc. - Consulting Engineers
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Laboratory No. 764752
Authorization:

Report on: One (1) Sample of Reactor Fuel Submitted for Chemical Analysis

One (1) sample of reactor fuel was received from Mr. Wayne Okel on August ~~10~~ 15, 1972. The sample has the following identification and required analysis:

Identification: Bag "BH" for Proimate Analysis

The analysis was performed in accordance with the procedures outlined in ASTM D-271, Part 19, 1971 Edition. A discussion of the actral procedures used is included in our laboratory report #759640. The references for the proximate analyses are as follows:

Analytical Parameter	Reference
Moisture	ASTM D-271 - Section 8
Ash	ASTM D-271 - Section 11
Volatile Matter	ASTM D-271 - Section 14
Fixed Carbon	ASTM D-271 - Section 17
BTU/1b	ASTM D-271 - Section 44-47

The sample was prepared by placing a portion of it in a beaker and drying it at 75°C to determine the moisture content. The dried sample was then placed in a beaker and emulsified as fine as possible. This homogeneous sample was then placed back in the oven and redried at 75°C. The remaining analyses were performed using this dried sample. The result of these analyses are as follows:

RECEIVED

AUG 17 1972

REFERRED TO ______________

ANSWERED ______________

(continued)

Proximate Analysis	Bag "BH"
Moisture, %	56.28
Ash, %	5.90
Volatiles, %	33.12
Fixed Carbon, %	4.70
BTU/lb (dry) Trial 1	7860
BTU/lb (dry) Trial 2	7874
BTU/lb (dry) Average	7867

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.
Clyde W. Kayser
Clyde W. Kayser
Chemist, Instrumentation Lab.
Chem-Met Division

3 - Client
2 - File
CWK/gmb

LABORATORY REPORT

August 8, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller
Report on: Three (3) Water Samples Submitted for Analyses

Laboratory No. 764432
Authorization: 604

The following water samples were received by BOWSER-MORNER from your firm on July 18, 1972. These samples have the following identification and required analyses.

Ash Water (7-18-72) for
- pH
- Total Solids
- Volatile Solids
- Dissolved Solids
- Settleable Solids

White Water (7-18-72) for
- pH
- 5 Day BOD
- Total Solids
- Dissolved Solids
- Settleable Solids

Waste Water (7-18-72) for
- pH
- 5 Day BOD
- Total Solids
- Dissolved Solids
- Settleable Solids

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewaters, 13th Edition, 1971. Using these procedures the following results are obtained:

	Ash Water 7-18-72	White Water 7-18-72	Waste Water 7-18-72
pH	8.48	5.22	5.25
5 Day BOD, mg/1	-	5650	5700
Total Solids, mg/1	12978	11717	7158
Dissolved Solids, mg/1	2825	4960	4405
Settleable Solids, mg/1	9857	6408	2204
Volatile Solids, mg/1	1481	-	-

(continued)

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/mj

LABORATORY REPORT

July 10, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Report on: Four (4) Samples Submitted for Analysis

Laboratory No. 763133
Authorization:

The following three water samples and one reactor sand sample were received by BOWSER-MORNER from Mr. Wayne Okel on June 21, 1972. These samples have the following identification and required analysis:

Ash Water (6-21-72) for	pH Total Solids Volatile Solids Dissolved Solids Settleable Solids
Wastewater (6-21-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
White Water (6-21-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
Reactor Sand (6-21-72) for	Sieve Analysis Silica Content

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewaters, 13th Edition, 1971.

The sieve analysis of the reactor sand was run in accordance with the procedures outlined in ASTM-D-1140, Part 11, 1970 Edition. The silica content of the sand was determined by a wet chemical filtration method. Using these procedures the following results are obtained.

Waters:	Ash Water 6-21-72	Wastewater 6-21-72	White Water 6-21-72
pH	10.13	4.70	5.16
5 Day BOD, mg/l	-	6400	9600
Total Solids, mg/l	11435	12082	15514
Dissolved Solids, mg/l	2002	5552	4549

(continued)

	Ash Water 6-21-72	Wastewater 6-21-72	White Water 6-21-72
Settleable Solids, mg/l	9389	5492	10382
Volatile Solids, mg/l	1006	-	-

Reactor Sand:	Reactor Sand 6-21-72
Silica Content	78.00%

Sieve Analysis:

Sieve Number, US	Weight Sand Retained By Sieve (grams)	% Sand Passing Sieve
3/8	0	100
4	39	96
5	53	95
6	72	93
8	119	89
10	148	86
12	170	84
16	273	75
20	399	63
30	558	48
40	788	27
50	1040	4
60	1068	1.0
70	1074	.60
325	1077	.30
Sample Weight	1080 grams	

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jm

LABORATORY REPORT

June 23, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Laboratory No. 762497
Authorization:

Report on: One (1) Sample of Reactor Feed Submitted for Chemical Analysis

The sample was received from Mr. Wayne Okel on June 21, 1972. It has the following identification and required analysis:

Identification: Bag BF for Proximate Analyses

The analysis was performed in accordance with procedures outlined in ASTM D-271, Part 19, 1971 Edition. A discussion of the actual procedures used is included in our Report No. 759640. The references for the proximate analysis were as follows:

Analytical Parameter	Reference	Temperature
Moisture	ASTM D-271 (Section 8)	75°C
Ash	ASTM D-271 (Section 11)	750°C
Volatile Matter	ASTM D-271 (Section 14)	950°C
Fixed Carbon	ASTM D-271 (Section 17)	
BTU/lb.	ASTM D-271 (Sections 44-47)	

The sample was placed in a beaker and dried at 75°C to determine the moisture conte
The dried sample was then placed in a blender and emulsified as fine as possible. This homogeneous sample was placed back in the oven and redried at 75°C. The remaining analy
were performed using this dried sample. The results of these analyses are as follows:

Proximate Analysis		Bag BF
Moisture, %		46.27
Ash, %		7.63
Volatile Matter, %		40.50
Fixed Carbon, %		5.60
BTU/lb. (Dry)	Trial 1	7555
	Trial 2	7461
	Average	7508

(continued)

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CLK/jm

LABORATORY REPORT

June 8, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller
Report on: Four (4) Samples Submitted for Analysis

Laboratory No. 761871
Authorization:

The following three water samples and one reactor sand sample were received by BOWSER-MORNER from Mr. Wayne Okel on May 23, 1972. These samples have the following identification and required analysis:

Ashwater (5-23-72) for	pH Total Solids Volatile Solids Dissolved Solids Settleable Solids
Wastewater (5-23-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
Whitewater (5-23-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
Reactor Sand (5-23-72) for	Sieve Analysis Silica Content

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewaters, 13th Edition, 1971. The sieve analysis of th reactor sand was obtained using procedures in accordance with ASTM D-1140, Part 11, 1970 Edition. The silica content of the sand was determined using a wet chemical filtration method. The analyses are as follows:

Waters:	Ashwater 5-23-72	Wastewater 5-23-72	Whitewater 5-23-72
pH	9.81	6.30	5.76
5 Day BOD, mg/1	-	4700	2825
Total Solids, mg/1	28519	25559	13726
Dissolved Solids, mg/1	3718	5597	5957

(continued)

Waters:

	Ashwater 5-23-72	Wastewater 5-23-72	White water 5-23-72
Settleable Solids, mg/l	14697	19415	7167
Volatile Solids, mg/l	2119	-	-

Reactor Sand:

	Reactor Sand (5-23-72)
Silica Content	77.76

Sieve Analysis:

Sieve Number,US	Wt. Sand Retained By Sieve (grams)	% Sand Passing Sieve
1/2	0	100
3/8	2	100
4	33	97
5	46	96
6	64	94
8	107	90
10	132	88
12	156	85
16	237	78
20	345	65
30	505	52
40	736	31
50	1003	6
60	1043	2
70	1053	1
80	1056	0.7
100	1057	0.6
140	1059	0.4
200	1059	0.4
270	1060	0.3
325	1060	0.3

Sample Size - 1063 grams

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser
Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

Client - 3
File - 2
CWK/jm

LABORATORY REPORT

June 5, 1972

Report to:	A. M. Kinney, Inc. - Consulting Engineers - 2912 Vernon Place - Cincinnati, Ohio 45219 Attn: Mr. Carl Miller	Laboratory No. Authorization:	761744 604
Report on:	One (1) Sample of Refuse Submitted for Complete Chemical Analysis		

The following sample was received for analysis from Mr. Wayne Okel on May 9, 1972. sample has the following identification and required analysis:

Bag BE for Proximate, Ultimate and Complete Ash Analysis

The analyses were performed in accordance with ASTM Procedure D-271 (Part 19), 1971 Edition; American Public Works Association of Refuse, Appendix A; and Standard Methods, 13th Edition, 1971. The analysis were performed as follows:

Proximate Analysis:

Parameter	Procedure	Temperature
Moisture Content	ASTM D-271 (Section 8)	75°C
Ash Content	ASTM D-271 (Section 11)	750°C
Volatiles Content	ASTM D-271 (Section 14)	950°C
Fixed Carbon Content	ASTM D-271 (Section 17)	
BTU/lb.	ASTM D-271 (Sections 44-47)	

Ultimate Analysis:

Carbon	APWA, ~~Appendix A, Page 399~~	ASTM 271
Hydrogen	APWA, ~~Appendix A, Page 399~~	
Oxygen	ASTM D-271 (Section 42)	
Nitrogen	ASTM D-271 (Sections 38-40)	
Sulfur	ASTM D-271 (Sections 22-23)	
Fluorine	Orion Selective Ion Electrode	
Chlorine	ASTM D-271 (Sections 3-6)	
Al_2O_3, %, (Acid Soluble Aluminum)	Perkin-Elmer Atomic Absorption	

Ash Analysis:

Al_2O_3	Perkin-Elmer Atomic Absorption Handbook
SiO_2	Perkin-Elmer Atomic Absorption Handbook
CaO	Perkin-Elmer Atomic Absorption Handbook
MgO	Perkin-Elmer Atomic Absorption Handbook
K_2O	Perkin-Elmer Atomic Absorption Handbook
Zinc	Perkin-Elmer Atomic Absorption Handbook

Called D
6-6-72

(continued)

Lead	Perkin-Elmer Atomic Absorption Handbook
Sulfates	Turbidometric Titration with $BaCl_2$
Chloride	Mercuric Chloride Titration
Trace Metals	Semi-Quantitative Determination by Emission Spectroscopy

An outline of the exact procedures used is included in our Laboratory Report #759640 dated April 14, 1972. The following results are obtained:

Sample Identification:	**Bag BE**
Proximate Analysis:	
Moisture, %	59.90
Ash, %	4.70
Volatile Matter, %	31.08
Fixed Carbon, %	4.32
BTU/lb. (dry sample) (trial 1)	7130
BTU/lb. (dry sample) (Trial 2)	7173
BTU/lb. (dry sample) (Average)	7152
Ultimate Analysis:	
Carbon, %	18.00
Hydrogen, %	2.67
Nitrogen, %	.03
Oxygen, %	Remainder
Sulfur, %	.061
Chlorine, %	.37
Fluorine, %	.06
Acid Soluble Al as Al_2O_3, %	.38
Ash Analysis:	
Al_2O_3, %	.30
SiO_2, %	1.63
Fe_2O_3, %	.13
CaO, %	.02
MgO, %	.02
Na_2O, %	.02
K_2O, %	.07
Zinc, %	.007
Lead, %	.011
Chlorides, %	.018
Sulfates, %	1.49

mult. .4

Trace Metals:

Nickel	.0005 - .0025
Titanium	.015 - .050
Copper	.0005 - .0025
Tin	.0015 - .0050
Molybdenum	.0015 - .0050
Lead	.0015 - .0050
Manganese	.010 - .050

The values for the proximate and the carbon and hydrogen determinations are on an as received basis. The remainder of the analyses are calculated to a dry sample basis. The metal oxides in the ash analysis have been reported as percent of the oxide present in the original sample. The values for chloride and sulfate have been reported as the percentage of sulfate or chloride in the ash.

The question has been raised as to whether or not our values for carbon and hydrogen have been reported on an as received basis or on a dry basis. To check the problem out, Mr. Edward Drinkuth set up the carbon-hydrogen combustion furnace as described in Appendix A of APWA and obtained the following values.

A-IM-2 11

Sample Identification:	Bag AX	Bag AW	Bag AY
Carbon, %	20.79	19.84	25.94
Hydrogen, %	2.73	2.47	3.47

After comparing these values to our previous values we have come to the conclusion that these values are on the as received basis. We also feel that our previously reported values for carbon and hydrogen have also been reported on an as received basis.

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

Client - 3
File - 2
CWK/jm

LABORATORY REPORT

May 19, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Laboratory No. 760961
Authorization:

Report on: Three (3) Samples of Water Submitted for Analysis

The three (3) water samples were received on May 9, 1972 from Mr. Wayne Okel. These samples have the following identification and required analysis:

Ashwater (5-9-72) for
- pH
- Total Solids
- Total Volatile Solids
- Total Dissolved Solids
- Settleable Solids

Wastewater (5-9-72) for
- pH
- 5 Day BOD
- Total Solids
- Total Dissolved Solids
- Settleable Solids

White Water (5-9-72) for
- pH
- 5 Day BOD
- Total Solids
- Total Dissolved Solids
- Settleable Solids

The above water samples were analyzed in accordance with the procedures outlined i Standard Methods for Water and Wastewater, 13th Edition, 1971. Using these procedures the following results are obtained:

Analysis Parameter	Ash Water 5-9-72	White Water 5-9-72	Wastewater 5-9-72
pH	9.45	5.22	5.20
5 Day BOD	-	9200	5150
Total Solids, mg/l	13176	10056	7820
Total Volatile Solids, mg/l	1710	-	-
Total Dissolved Solids, mg/l	2303	3090	3244
Total Settleable Solids, mg/l	11267	2451	2913

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser
Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Division

3- Client
2- File
SL/jm

LABORATORY REPORT

May 1, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl MIller
Report on: Four (4) Samples Submitted for Analysis

Laboratory No. 760280
Authorization: 604

The three (3) water samples and one (1) sand sample were received on April 10, 197 from Mr. Wayne Okel. These samples have the following identifications and required analyses:

Ash Water (4-10-72) for	pH Total Volatile Solids Total Solids Total Dissolved Solids Total Settleable Solids
Wastewater (4-10-72) for	pH 5 Day BOD Total Solids Total Dissolved Solids Total Settleable Solids
Whitewater (4-10-72) for	pH 5 Day BOD Total Solids Total Dissolved Solids Total Settleable Solids
Reactor Sand (4-10-72) for	Sieve Analysis Silica Content

The above water standards were analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewater, 13th Edition, 1971. The sieve analysis of th reactor sand was obtained using procedures in accordance with ASTM (D-1140), Volume 11, 1970 Edition. The silica content of the sand was obtained using a wet chemical filtrati method. The results of these analyses are as follows:

Water Analysis	Ash Water 4-10-72	Wastewater 4-10-72	Whitewater 4-10-72
pH	8.82	5.07	5.71
5 Day BOD	-	3150	850
Total Solids, mg/1	9367	5936	3113
Total Volatile Solids, mg/1	909	-	-
Total Dissolved Solids, mg/1	2202	2048	1126

(continued)

	Ash Water 4-10-72	Wastewater 4-10-72	Whitewater 4-10-72
Total Settleable Solids, mg/l	7793	4260	1313

Sand Analysis: **Reactor Sand 4-10-72**

SiO_2% 76.40

Sieve Number, US	Wt. Sand Retained (grams)	% Sand Passing
1/2		
3/8	0	100
4	17	98
5	26	97
6	35	96
8	53	94
10	64	93
12	74	92
16	112	88
20	215	78
30	476	50
40	741	22
50	912	4
60	940	1
70	947	0.8
80	951	0.3

Sample Wt. = 954 g

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jm

LABORATORY REPORT

April 26, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Laboratory No. 760132
Authorization:

Report on: One (1) Sample of Refuse Submitted for Proximate Analysis

The sample was received from Mr. Wayne Okel on April 18, 1972. It has the following identification and required analysis.

Bag "BD" for Proximate Analysis

The analysis was performed in accordance with ASTM D-271, Part 19, 1971 Edition. A discussion of the actual procedures used in this analysis is included in our Report #759640 The references for the proximate analysis are as follows:

Analysis Parameter	Reference	Temperature
Moisture	ASTM D-271 (Section 8)	75°C
Ash	ASTM D-271 (Section 11)	750°C
Volatile Matter	ASTM D-271 (Section 14)	950°C
Fixed Carbon	ASTM D-271 (Section 17)	
BTU/lb.	ASTM D-271 (Sections 44 - 47)	

The samples were placed in a beaker and dried at 75°C to determine the moisture content. The dried sample was then placed in a blender and blended as fine as possible. This homogeneous sample was put back into the oven and redried at 75°C. The remaining analysis was performed using the dried sample. The result of this analysis is as follows:

Proximate Analysis	Bag BD
Moisture, %	54.17
Ash, %	5.85
Volatile Matter, %	35.82
Fixed Carbon, %	4.16
BTU/lb. (dry) Trial 1	6542
BTU/lb. (dry) Trial 2	6602
BTU/lb. (dry) Average	6572

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jm

LABORATORY REPORT

April 26, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller

Laboratory No. 760131
Authorization:

Report on: One (1) Sample of Wastewater Submitted for Analysis

The water sample was received from Mr. Wayne Okel on April 18, 1972. The sample has the following identification and required analysis:

Identification:	Anal
Wastewater (4-18-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids

[illegible] 1972
REFERRED TO
ANSWERED

The above sample was analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewater, 13th Edition, 1971. Using these procedures the followi results were obtained:

	Wastewater (4-18-72)
pH	6.06
5 Day BOD	2650
Total Solids, mg/l	8935
Dissolved Solids, mg/l	4506
Settleable Solids, mg/l	2917

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser
Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jm

LABORATORY REPORT

April 14, 1972

Report to:	A. M. Kinney, Inc. - Consulting Engineers - 2912 Vernon Place - Cincinnati, Ohio 45219 Attn: Mr. C. K. Miller
Report on:	One (1) Sample of Refuse Submitted for Proximate Analysis

Laboratory No. 759642
Authorization: 604

The sample was received from Mr. Wayne Okel on April 10, 1972. It has the followin identification and required analysis:

Bag BC for Proximate Analysis

The analyses were performed in accordance with ASTM D-271, Part 19, 1971 Edition; a discussion of the actual procedures used in this analysis are included in our Lab. Repor No. 759640. The references for the proximate analysis are as follows:

Analysis Parameter	Reference	Temperature
Moisture	ASTM D-271 (Section 8)	75°C
Ash	ASTM D-271 (Section 11)	750°C
Volatile Matter	ASTM D-271 (Section 14)	950°C
Fixed Carbon	ASTM D-271 (Section 17)	
BTU/lb.	ASTM D-271 (Sections 44-47)	

The samples were placed in a beaker and dried at 75°C to determine the moisture con The dried samples were then placed in a blender and blended as fine as possible. The ho geneous sample was placed back in the oven and redried at 75°C. All of the remaining an were determined using this dried sample. The results of these analyses are as follows:

Proximate Analysis	BC
Moisture, %	52.80
Ash, %	4.91
Volatile Matter, %	37.34
Fixed Carbon, %	4.95
BTU/lb. (dry sample) Trial 1	7424
BTU/lb. (dry sample) Trial 2	7398
BTU/lb. (dry sample) Average	7411

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

Client - 3
File - 2
CWK/jm

LABORATORY REPORT

April 14, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller

Laboratory No. 759640
Authorization:

Report on: One (1) Sample of Refuse Submitted for Chemical Analysis

The following sample was received from Mr. Wayne Okel on March 7, 1972. This sample has the following identification and required analysis:

Bag BB for Proximate, Ultimate and Complete Ash analysis

At the same time Mr. Okel requested that we recheck the analysis of bags AW and AY fc chlorine, chlorides and sulfates, and that we should run a complete ash analysis on these two samples.

The analyses were performed in accordance with ASTM Procedure D-271 (19), 1969 Editic American Public Works Assocaition of Refuse, Appendix A; and Standard Methods, 13th Editic 1971. The analysis were performed as follows:

Proximate Analysis:

1.) Moisture ASTM D-271 (Section 8)

A portion of the sample is placed in a pre-weighed beaker and allowed to stand in a oven at 75°C for 8 hours. The beaker is then removed from the oven, cooled in a dessicator, and reweighed. The percent moisture is calculated from the following equation:

$$\% \text{ Moisture} = \frac{(\text{Wt. of Original Sample} - \text{Wt. of Dry Sample})}{\text{Sample Weight}} \times 100$$

2.) Ash Content ASTM D-271 (Section 11)

A known weight of part of the moisture dried sample is placed in a pre-weighed porcelain crucible and placed in a muffle oven at 750°C. The crucible is left in the oven for an hour, or until all of the initial sample is burned off and a light-colored ash is left. The crucible is then removed from the oven, put in a dessicator, cooled, and reweighed. The percent ash is calculated from the following equation:

$$\% \text{ Ash} = \frac{(\text{Wt. of Ash})}{(\text{Corrected Sample Wt.}} \times 100$$

$$\text{Corrected Sample Weight} = \frac{(\text{Wt. Sample for Ash})\ (\text{Wt. Sample for Moisture})}{(\text{Wt. Residue from Moisture})}$$

(continued)

3.) Volatile Matter ASTM D-271 (Section 14)

A portion of the dried sample is placed in a pre-weighed platinum crucible with a lid. The weight of the sample is obtained and the crucible is placed in a muffle furnace at 950°C for exactly 7 minutes. The crucible is removed, placed in a dessicator, cooled, and reweighed. The percent volatile matter is calculated from the following equation:

$$\%\ \text{Volatile Matter} = \frac{(\text{Wt. of Original Sample} - \text{Wt. of Residue})}{(\text{Corrected Sample Wt.})} \times 100$$

4.) Fixed Carbon ASTM D-271 (Section 17)

The fixed carbon is calculated from the following equation:

$$\%\ \text{Fixed Carbon} = 100 - (\%\ \text{Moisture} + \%\ \text{Ash} + \%\ \text{Volatile Matter})$$

5.) BTU's ASTM D-271 (Sections 44-47)

The apparatus used in this procedure is a Paar Bomb Colorimeter. A .5g portion of the dried sample is placed in a stainless steel crucible, and set on the supports stand of the bomb. The bomb is sealed and 250 psi of oxygen is added. The bomb is ignited and the increase in temperature of the water jacket is noted. The BTU/lb. is calculated from the following equation:

$$\text{BTU/lb.} = \frac{(\text{Benzoic Acid Factor})\ (\Delta T)}{(\text{Sample Wt.})}$$

Ultimate Analysis:

6.) Carbon APWA, Appendix A, Page 399

7.) Hydrogen

The carbon and hydrogen are run on an electrically heated organic combustion furnace. A 1.0 gram portion of the dried sample is weighed directly into a combustion crucible. The crucible is placed in the combustion tube of the furnace, and the electric heaters are turned on. A flow of oxygen through the combustion tube is, begun and the sample is heated for 30 minutes to allow for complete combustion. Following this combustion the sample is kept in the tube with the oxygen still flowing to make certain all of the water produced on combustion is carried to the moisture absorption tube. The percentages of carbon and of hydrogen are obtained from the following equations:

$$\%\ \text{Carbon} = \frac{(\text{Increase in Weight of CO2 Absorption Bulb})\ (27.27)}{\text{Sample Weight}}$$

$$\%\ \text{Hydrogen} = \frac{(\text{INCREASE in Weight of Moisture Absorption Bulb})\ (11.17)}{\text{Sample Weight}}$$

8.) Oxygen ASTM D-271 (Section 42)

By definition, the oxygen content of the sample is determined from the following equation:

% Oxygen = 100 - (% Hydrogen + % Carbon + % Nitrogen + % Sulfur + % Ash + % Moisture)

9.) Nitrogen ASTM D-271 (Sections 38-40)

The procedure used in this determination is the Kjeldahl-Gunning Method. A 1 g sample is dissolved in 25 mls of 1:1 HCl solution and is distilled in a Kjeldahl flask. The distillate is collected in an Erlenmeyer flask and is back titrated with standard NaOH solution. The percent nitrogen present is calculated from the following equation:

$$\text{\% Nitrogen} = \frac{(\text{Normality}_{\text{NaOH}})\ (\text{Vol. NaOH titrated})}{(\text{Sample Wt.})} \quad \text{X } 100$$

10.) Sulfur ASTM D-271 (Sections 22-23)

The procedure used in the sulfur determination is the bomb washing method. One of the trials from the BTU determination is used. The contents of the bomb are washed into a beaker with a methyl orange-water wash solution until no acid reaction occurs. Ammonium hydroxide is added to the solution and it is filtered. Bromine water is added to the filtrate and the sulfur is precipitated as $BaSO_4$ with the addition of $BaCl_2$. The percent sulfur is calculated from the following equation:

$$\text{\% Sulfur} = \frac{(\text{Wt. BaSO4 precipitated})\ (13.74)}{(\text{Sample Wt.})}$$

11.) Fluorine Orion Selective Ion Electrode

A 1.0 gram sample of the dried sample is placed in a beaker and treated with 50 mls of distilled water. The solution is filtered and the filtrate is treated with a buffer solution. The fluoride content is then determined on a pH meter using an Orion selective ion fluoride electrode. The fluorine content is then calculated from this value for fluoride.

12.) Chlorine ASTM D-2361 (Sections 3-6) (Modified Procedure)

The chlorine content of the sample is determined using a Paar Bomb Colorimeter. A 0.8 gram sample of the dried material is placed in a stainless steel cup and placed in the bomb containing 5 mls of sodium carbonate solution. The bomb is sealed and 500 psi oxygen is pumped into it. The bomb is placed in the water jacket and ignited. The contents of the bomb are washed into a beaker, the solution is acidified and the chlorine is precipitated as AgCl using $AgNO_3$ as a reagent. The solution is allowed to set overnight in a dark place and is then filtered through a pre-weighed sintered glass crucible. The present chlorine in the sample is calculated from the following equation:

$$\% \text{ Chlorine} = \frac{(\text{Wt. AgCl precipitated})\ (24.74)}{(\text{Sample Wt.})}$$

13.) **Acid Soluble Aluminum - Perkin-Elmer Atomic Absorption Handbook**

A 1.0 gram sample of the dried sample is placed in a beaker and dissolved in 3.0 mls of HCl. The solution is filtered, and the filtrate is collected in a 100 ml volumetric flask. The flask is diluted to the mark with distilled water and the concentration of aluminum is determined on an atomic absorption spectrophotometer using the absorbance technique. The acid soluble aluminum in the sample is reported in terms of Al_2O_3 content.

Ash Analysis:

14.) Al_2O_3 - Perkin-Elmer Atomic Absorption Handbook
Fe_2O_3 - Perkin-Elmer Atomic Absorption Handbook
CaO - Perkin-Elmer Atomic Absorption Handbook
MgO - Perkin-Elmer Atomic Absorption Handbook
K_2O - Perkin-Elmer Atomic Absorption Handbook
Zinc - Perkin-Elmer Atomic Absorption Handbook
Lead - Perkin-Elmer Atomic Absorption Handbook

The metal oxides of the ash are determined by using a sodium fusion technique on the atomic absorption spectrophotometer. A .25 g sample of the ash is ground up in a morter and pestle and placed in a platinum crucible. Approximately 2 grams of sodium carbonate is added, the crucible is covered, and heated over a Fisher burner. When the sample in the crucible becomes a molten liquid the crucible is removed from the burner and cooled. The cooled crucible is placed in a 1:1 HCl solution until all of the fused material is dissolved. The solution is then filtered into a 100 ml volumetric flask and the metal concentrations are determined on an atomic absorption spectrophotometer. The filter paper is saved for the SiO_2 determination. The oxides of the metals are calculated from these results by multiplying the value for the elemental determination by the appropriate gravimetric factor.

15.) Na_2O **Perkin-Elmer Atomic Absorption Handbook**

A .5 gram sample of the ash is digested in 20 mls of HCl overnight. The solution is then filtered into a 100 ml volumetric flask and is run on the atomic absorption spectrophotometer as in the procedure above.

16.) SiO_2 **Wet Chemical Method**

The filter paper from the sodium fusion of the ash is placed in a platinum crucible and ignited over a Fisher burner. After all the paper has been burned off, the crucible is removed from the burner and allowed to cool. The crucible and contents are weighed, 1 ml of H_2SO_4 is added, and the contents are fumed in HF under an evaporating coil. When all of the acid is evaporated off the crucible is removed, allowed to cool, and reweighed. The loss in weight between the two samples is the amount of SiO_2 in the sample. The value is then multiplied by 400 which gives the % SiO_2 in the ash.

17.) **Sulfates** Turbidometric Titration with $BaCl_2$

A .2 g sample of the ash is placed in a beaker and treated with 100 mls of water. After letting the solution set for an hour a known amount of Barium Chloride is added to precipitate $BaSO_4$. The amount of $BaSO_4$ in the sample is determined by measuring the cloudiness of the sample on a turbidometer, comparing the amount of cloudiness present to a blank determination. The % sulfate is then calculated by multiplying the result by the gravimetric factor for sulfate.

18.) **Chlorides** Mercuric Chloride Titration

A .1 g sample is treated with 100 mls H_2O and 2 mls Nitric acid and is filtered into an Erlenmeyer flask. The amount of chloride present is determined by titrating the solution with standard mercuric nitrate solution and by performing the appropriate calculations

19.) **Trace Metals** Semi-Quantitative Determination by Emission Spectroscopy

The trace metals present in the ash are determined by using the technique of powder burns on an emission spectrograph. A known weight of the ash is placed in a vial and diluted with pure graphite and lithium carbonate to 300 mgs. A set of standard mixtures containing different amounts of trace metals is made by the same method. Following this preparation of standard a fixed volume of each sample and standard is placed in an individual graphite electrode cup and is burned by a DC Arc source on the emission spectrograph. The relative concentrations of the metals in the sample are determined by comparing the density of the spectra lines of the sample to those of the standards. The results are reported as a range of values.

Using the above techniques the following results are obtained:

Sample Identification:	AX	AY	BB
Proximate Analysis			
Moisture, %	53.86	54.36	54.15
Ash, %	3.57	4.63	5.90
Volatiles, %	37.49	36.03	38.29
Fixed Carbon, %	5.08	4.98	1.66
BTU/lb. (dry sample)Trial 1	8035	8300	8080
BTU/lb. (dry sample)Trial 2	8016	8391	8067
BTU/lb. (dry sample)Average	8026	8345	8077
Sodium, %	-	-	.006
Silica, %	-	-	1.51

Sample Identification:	**AX**	**AY**	**BB**
Ultimate Analysis			
Carbon	23.85	22.90	22.45
Hydrogen	3.21	2.84	2.76
Nitrogen	.026	.016	.050
Oxygen	Remainder	Remainder	Remainder
Sulfur	.13	.07	.39
Chlorine, %	.62	.35	.31
Fluorine, %	.05	.05	.04
Acid Soluble Al (as Al_2O_3) %	1.10	.79	.76
Ash Analysis			
SiO_2, %	1.47	1.78	2.76
Al_2O_3, %	1.23	.84	.82
Fe_2O_3, %	.25	.23	.34
CaO, %	.09	.04	.10
MgO, %	.19	.10	.20
Na_2O, %	.02	.01	.01
K_2O, %	.09	.05	.07
Zinc, %	.005	.015	.009
Lead, %	.002	.010	.005
Chlorides, %	.058	.095	.068
Sulfate, %	1.65	1.39	1.42
Trace Metals			
Nickel	.0025-.0015	.0005-.0025	.0005-.0025
Titanium	.015-.05	.05-.15	.015-.05
Copper	.015-.05	.025-.10	.015-.05
Tin	.0015-.005	.0005-.005	.0025-.005
Molybdenum	.0015-.005	.0005-.005	.0025-.005
Lead	.005-.01	.010-.025	.015-.025
Manganese	.015-.050	.025-.05	.025-.15

The values for the proximate and ultimate determinations have been converted back to a dry basis sample. The metal oxides in the ash analysis have been reported as percent of oxide present in the original sample. This value is obtained by multiplying the grams of oxide present in the ash by the percentage of ash in the original sample. The trace metals are reported in the same manner. However both the sulfate and chloride values are reported as percentage of sulfate or chloride in the ash only.

In our rechecking of the data on samples AX and AY we found that the values for sulfate and chlorides that have been reported on previous reports were recorded as parts per million, and not percent. Also the previous analyses for chlorine were in error, and the use of bomb colorimetry in the chlorine determination gives a more accurate and reproducible result. I hope that the change in analytical procedures will rectify the discrepancies in our prevoius work.

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jo

LABORATORY REPORT

April 13, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller
Laboratory No. 759623
Report on: Two (2) Water Samples Submitted for Analysis
Authorization:

The two water samples were received from Mr. Wayne Okel on March 23, 1972. The samples have the following identification and required analysis:

Identification:

Whitewater (3-23-72) for	pH 5 Day BOD Total Solids Total Dissolved Solids Settleable Solids
Wastewater (3-23-72) for	pH 5 Day BOD Total Solids Total Dissolved Solids Settleable Solids

The above samples were analyzed in accordance with procedures outlined in Standard Methods for Water and Wastewaters, 13th Edition, 1971. The settleable solids determinat was run twice, once on a volume basis (results reported as ml/1) and once on a weight ba (results reported as mg/1) as requested by Mr. Okel. The results of these analyses are follows:

	(3-23-72) White water	(3-23-72) Wastewater
pH	5.20	5.50
5 Day BOD, mg/1	3275	1225
Total Solids, mg/1	14,432	6890
Total Dissolved Solids, mg/1	3897	2040
Settleable Solids, mg/1	9324	4398
Settleable Solids, ml/1	360	280

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

Client - 3
File - 2
CWK/jm

LABORATORY REPORT

March 17, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller
Report on: Three (3) Water Samples Submitted for Analysis

Laboratory No. 758768
Authorization:

The three (3) water samples you received in two installments. The white water and waste water samples were received on March 1, 1972 and the ash water sample was received on March 7, 1972. These samples have the following identification and required analysis.

White Water (3-1-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
Waste Water (3-1-72) for	pH 5 Day BOD Total Solids Dissolved Solids Settleable Solids
Ash Water (3-7-72) for	pH Total Solids Volatile Solids Dissolved Solids Settleable Solids

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Wastes and Wastewater, 13th Edition, 1971. The results of these analysis were as follows:

Sample Identification:	White Water (3-1-72)	Waste Water (3-1-72)	Ash Water (3-7-72)
pH	5.40	6.10	8.65
5 Day BOD, mg/l	3,800	2,175	-
Total Solids, mg/l	15,294	6,969	20,997
Dissolved Solids, mg/l	5,131	4,716	3,049
Volatile Solids, mg/l	-	-	2,680
Settleable Solids, ml/l	270	35	25

(continued)

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jm

LABORATORY REPORT

February 23, 1972

Report to: A. M. Kinney - Consulting Engineers - 2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carlton Miller

Laboratory No. 757947

Report on: Four (4) Samples Submitted for Analysis

Authorization:

The following three water samples and one reactor sand sample were received by BOWSER-MORNER on February 11, 1972. These samples have the following identification and required analyses:

Ash Water (2-11-72) for	pH Volatile Solids Suspended Solids Dissolved Solids Settleable Solids
White Water (2-11-72) for	pH 5 Day BOD Suspended Solids Dissolved Solids Settleable Solids
Waste Water (2-11-72) for	pH 5 Day BOD Suspended Solids Dissolved Solids Settleable Solids
Reactor Sand (2-11-72) for	Sieve Analysis SiO_2 Content

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Waste and Wastewater, 13th Edition, 1971. The sieve analysis of the reactor sand was obtained using procedures in accordance with ASTM (D-1140), Part 1 1970 Edition. The silica content of the sand was obtained using wet chemical filtratio methods. The results of these analyses are as follows:

(continued)

Waters:	Ash Water 2-11-72	Waste Water 2-11-72	White Water 2-11-72
pH	7.89	4.20	4.73
5 Day BOD, mg/l	-	6050	7300
Suspended Solids, mg/l	9700	2592	8692
Dissolved Solids, mg/l	3568	5296	6560
Settleable Solids, ml/l	24	77.2	300.0
Volatile Solids, mg/l	1513	-	-

Reactor Sand:

Sieve Number, US	Wt. Sand Passing Sieve Grams	% Sand Passing Sieve
3/8"	0	100
#4	37	97
#5	57	95
#6	82	92
#8	161	85
#10	220	80
#12	290	73
#16	488	55
#20	714	34
#30	890	17
#40	999	7
#50	1051	1
#60	1071	1

Sample Size 1076g

Silicon Content 63.00 % SiO_2

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Laboratory
Chemical & Metallurgical Division

3- Client
2- File
CWK/jm

LABORATORY REPORT

February 7, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carl Miller

Laboratory No. 757334

Report on: Six (6) Samples Submitted for Analysis

Authorization:

The five water samples and one sand sample were received in two installments; the first two water samples were received on September 30, 1971, and the remaining samples were received on January 19, 1972. These samples have the following identification and required.

Ash Water (9-30-71) for	pH 5 Day BOD Total Suspended Solids Total Dissolved Solids Total Volatile Solids Total Solids
Combined White + Waste Waters (-9-30-71) for	pH 5 Day BOD Total Suspended Solids Total Dissolved Solids Total Volatile Solids Total Solids
Ash Water (1-19-72) for	pH Total Suspended Solids Total Volatile Solids Total Dissolved Solids Settleable Solids Total Solids
White Water (1-19-72) for	pH 5 Day BOD Total Suspended Solids Total Dissolved Solids Settleable Solids
Waste Water (1-19-72) for	pH 5 Day BOD Total Suspended Solids Total Dissolved Solids Settleable Solids

(continued)

Reactor Sand (1-19-72) for

Sieve Analysis
Silicon

The above water samples were analyzed in accordance with procedures outlined in Standard Methods for Waste and Wastewater, 13th Edition, 1971. The sieve analysis of the reactor sand was obtained using procedures in accordance with ASTM (D-1140), Volume 11, 1970 Edition. The silicon content of the sand was obtained using wet chemical filtration methods. The results of these analyses areas follows:

Waters:	Combined White + Wastewater 9-30-71	Ash Water 1-19-72	Waste-Water 1-19-72	White Water 1-19-72	Ash Water 9-30-71
pH	4.71	6.50	7.39	6.91	8.70
5 Day BOD, mg/l	4400	-	1700	725	150
Total Solids, mg/l	7366	16,398	-	-	9301
Total Suspended Solids, mg/l	4884	10,728	5160	1070	9520
Total Dissolved Solids, mg/l	3112	2700	270	580	2108
Total Volatile Solids, mg/l	5407	1184	-	-	1066
Settleable Solids, ml/l	-	30	85	210	-

Sieve Analysis:

Reactor Sand (1-19-72)

Sieve Number, US	Wt. Sand Passing grams	% Passing
1/2	0	100.0
3/8	5.0	99.0
4	122.0	89.0
5	177.0	84.0
6	239.0	78.0
8	334.0	69.0
10	382.0	65.0
12	431.0	60.0
16	548.0	49.0
20	692.0	36.0
30	827.0	23.0
40	941.0	13.0
50	1047.0	3.0
60	1067.0	1.0
70	1072.0	0.5
80	1073.0	0.4
100	1073.0	0.4
Pan	1075.0	0.3

Sample Size 1077.0 g

	Reactor Sand (1-19-72)
SiO_2, %	64.40

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser

Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jm

LABORATORY REPORT

February 16, 1972

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. Carlton Miller

Laboratory No. 757726

Report on: One (1) Refuse Sample Submitted for Chemical Analysis

Authorization:

The following sample was received from your firm on February 11, 1972. The sampl had the following identification:

Bag "BA" for Proximate Analysis only

The analyses were performed in accordance with ASTM Procedure D-271, Part 19, 196 Edition; American Public Works Association of Refuse, Appendix A; and Standard Methods, 13th Edition, 1971. The analyses were performed as follows:

Proximate Analysis:

Analysis Parameter	Procedure	Temperature
Moisture	APWA	75°C
Ash	ASTM D-271	750°C
Volatile	ASTM D-271	950°C
Fixed Carbon	By Definition ASTM D-271	
BTU/lb.	Paar Bomb Colorimeter	

The samples were placed in a beaker and dried at 75°C to determine the moisture content. The dried samples were then placed in a blender and blended as fine as possib This homogeneous sample was placed back in the oven and redried at 75°C. The remaining analyses were obtained from this dried sample. The results of these analyses are as follows:

Proximate Analysis:	"BA"
Moisture, %	52.19
Ash, %	4.78
Volatiles, %	38.33
Fixed Carbon, %	4.70
BTU/lb. (dry sample) Trial 1	7761
BTU/lb. (dry sample) Trial 2	7720
BTU/lb. (dry sample) Average	7741

(continued)

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W. Kayser

Clyde W. Kayser
Chemist, Instrumentation Laboratory
Chemical & Metallurgical Division

3- Client
2- File
CWK/jm

LABORATORY REPORT

February 2, 1972

Report to: A. M. Kinney Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller

Laboratory No. 757325

Report on: Four (4) Refuse Samples Submitted for Chemical Analysis

Authorization:

The following samples were received from your firm during the week of January 3, 197 These samples have the following identification and required analysis.

Sample Identification:	Analysis
Bag AW	Proximate and Ultimate Analysis
Bag AX	Proximate and Ultimate Analysis
Bag AY	Proximate and Ultimate Analysis
Bag AZ	Proximate Analysis Only

The analyses were performed in accordance with ASTM Procedure D-271, Part 19, 1969 Edition; American Public Works Association of Refuse, Appendix A; and Standard Methods, 13th Edition, 1971. The analyses were performed as follows:

PROXIMATE ANALYSIS:

Analysis Parameter	Procedure	Temperature
Moisture	APWA	75°C
Ash	ASTM-D-271	750°C
Volatile Matter	ASTM-D-271	950°C
Fixed Carbon	By definition ASTM-D-271	
BTU/lb.	Paar Bomb Colorimeter	

ULTIMATE ANALYSIS:

Analysis Parameter	Procedure
Carbon	APWA
Hydrogen	APWA
Oxygen	Oxygen determinator
Nitrogen	APWA (Kjeldahl Method)
Sulfur	Paar Bomb Colorimeter and $BaCl_2$ Precipitation
Fluoride	FWPCA
Chlorine	Mercuric Nitrate Titration
Total Aluminum (as Al_2O_3)	Atomic Absorption

(continued)

The samples were placed in a beaker and dried at 75°C to determine the moisture content. The dried samples were then placed in a blender and blended as fine as possible. This homogeneous sample was placed back in the oven and redried at 75°C. All of the remaining analysis were obtained from this dried sample. The Al_2O_3 content was determined by fusing a portion of the ash residue with sodium carbonate. This fused mass was then dissolved in hydrochloric acid and the amount of aluminum present was determined by using the solution technique on an atomic absorption spectrophotometer.

The results of these analyses are as follows:

Proximate:

	AW	AX	AY	AZ
Moisture, %	52.31	53.86	54.36	51.84
Ash, %	5.19	3.57	4.63	5.72
Volatile Matter, %	37.99	37.49	36.03	38.41
Fixed Carbon, %	4.51	5.08	4.98	4.03
BTU/lb. (Dry Sample) Trial 1	8779	8035	8300	8040
BTU/lb. (Dry Sample) Trial 2	8806	8016	8391	8076
BTU/lb. (Dry Sample) Average	8793	8026	8345	8058

Ultimate:

	AW	AX	AY
Carbon, %	24.76	23.85	22.90
Hydrogen, %	3.68	3.21	2.84
Oxygen, %	Rem.	Rem.	Rem.
Nitrogen, %	.025	.026	.016
Sulfur, %	.27	.13	.07
Chlorine, mg/l	.18	.16	.09
Fluorine, mg/l	.03	.05	.05
Total Aluminum (as Al_2O_3), %	.73	.57	.68

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Samuel Lucas Jr.

Samuel Lucas, Jr.
Manager, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
SL/jm

LABORATORY REPORT

December 30, 1971

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller

Laboratory No. 756304

Report on: Three (3) Water Samples Submitted for Testing

Authorization:

The three (3) water samples were received during the week of November 15,1971. The samples have the following identification and analysis required:

White Water (11-16-71) for	pH 5 Day BOD Total Suspended Solids Total Dissolved Solids Settleable Solids
Waste Water (11-16-71) for	pH 5 Day BOD Total Suspended Solids Total Dissolved Solids Settleable Solids
Ash Water (11-16-71) for	pH Total Solids Total Volatile Solids Total Suspended Solids Total Dissolved Solids Settleable Solids Ash Analysis and Trace Metals Present

The water samples were analyzed in accordance with Standard Methods for Water and Wastewater, 13th Edition, 1971. The ash analysis of the ash water was performed on the solid residue remaining after a portion of the water in the sample was evaporated. The results of such analysis are as follows:

	White Water 11-16-71	Waste Water 11-16-71	Ash Water 11-16-71
pH	5.41	6.18	10.19
5 Day BOD, mg/l	3,370	3,100	-
Total Solids, mg/l	-	-	19,432
Total Suspended Solids, mg/l	7,244	776	16,856
Total Dissolved Solids, mg/l	6,408	4,016	2,244
Settleable Solids, ml/l	300	9.5	10.2
Total Volatile Solid, mg/l	-	-	1,098

(continued)

	Ash Water 11-16-71
Ash Analysis:	
SiO_2, %	Remainder
Al_2O_3, %	12.47
Fe_2O_3, %	5.00
CaO, %	9.09
MgO, %	4.97
Na_2O, %	3.30
K_2O, %	.96
Sulfate, %	1.22
Zinc, %	.28
Chloride, %	.387
Lead, %	.15
Trace Elements	
Nickel	.01 - .05
Silver	.005 - .01
Copper	.25 - .50
Tin	.10 - .25
Molybdenum	.001 - .005
Manganese	.25 - .50
Chromium	.01 - .05

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser
Clyde W. Kayser
Chemist, Instrumentation Laboratory
Chemical & Metallurgical Division

3- Client
2- File
CWK/jm

LABORATORY REPORT

December 3, 1971

Report to: A. M. Kinney - Consulting Engineers - 2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller

Laboratory No. 755476

Report on: Six (6) Samples Submitted for Chemical analysis

Authorization:

These samples were received during the weeks of October 18. The samples have the following identifications and analysis requested.

Sample Identification:	Analysis
Bag No. 1	Proximate + Ultimate Analysis
Bag No. 3	Proximate + Ultimate Analysis
Bag No. 4	Proximate + Ultimate Analysis
Bag No. 5	Proximate + Ultimate Analysis
Bag No. 13	Proximate + Ultimate Analysis
Bags No. 12+20	Proximate + Ultimate Analysis

Both the proximate and the ultimate analyses were performed in accordance with ASTM Procedure D-271, Part 19, 1969 Edition; American Public Works Association of Refuse, Appendix A; and Standard Methods, 13th Edition, 1971. The analyses were performed as follows:

Proximate Analysis

Analysis Parameter	Procedure	Temperature
Moisture	APWA	75°C
Ash	ASTM-D-271	750°C
Volatiles	ASTM-D-271	950°C
Fixed Carbon	By Definition ASTM-D-271	
BTU/lb.	Paar Bomb Colorimeter	

Ultimate Analysis

Analysis Parameter	Procedure
Carbon	APWA
Hydrogen	APWA
Oxygen	Oxygen Determinator
Nitrogen	APWA (Kjeldahl Method)
Sulfur	Paar Bomb Colorimeter + BaCl2 Precipitation
Fluorides	FWPCA
Chlorine	Mercuric Nitrate Titration
Total Aluminum	Atomic Absorption Spectrophotometer

The samples were placed loosely in a beaker and dried at 75°C to determine the moisture content. The dried samples were then placed in a blender and blended as fine as possible. At this point any pieces of foreign matter which had not been cut up were removed and either cut or pulverized to the desired size. These samples were then redried at 75° with all analyses except the moisture determinations being obtained from the dried sample.

The results of these analyses are as follows:

Proximate Analysis

Sample Identification:	Bag #1	Bag #3	Bag #4	Bag #5	Bag #13	Bag #12+20
Moisture, %	49.37	67.80	65.10	51.23	57.35	52.02
Ash, %	4.04	2.79	2.90	5.31	4.29	5.06
Volatiles, %	40.14	26.18	28.62	37.52	33.40	37.29
Fixed Carbon, %	6.45	3.23	3.38	5.94	4.96	5.63
BTU/lb. (Dry Sample) Trial 1	7938	7137	8033	7176	7518	6846
BTU/lb. (Dry Sample) Trial 2	7833	7183	8007	7066	7582	6845
BTU/lb. (Dry Sample) Average	7886	7160	8020	7121	7550	6846

Ultimate Analysis

Sample Identification:	Bag #1	Bag #3	Bag #4	Bag #5	Bag #13	Bag #12+20
Carbon, %	30.68	27.68	25.76	33.72	29.56	31.41
Hydrogen, %	2.75	3.02	3.50	2.68	3.76	1.95
Oxygen, %	Rem.	Rem.	Rem.	Rem.	Rem.	Rem.
Nitrogen, %	0.21	0.15	0.37	0.18	0.25	0.17
Sulfur, %	0.24	0.07	0.27	0.13	0.38	0.12
Fluorides, mg/l	0.01	0.008	0.007	0.015	0.005	0.011
Chlorine, mg/l	0.09	0.15	0.19	0.11	0.17	0.10
Total Aluminum, %	0.26	0.14	0.16	0.38	0.24	0.10
Total Al (reported as % Al_2O_3)	0.49	0.26	0.30	0.72	0.47	0.68

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Samuel Lucas Jr

Samuel Lucas, Jr.
Manager, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
SL/jp

LABORATORY REPORT

November 26, 1971

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219
Attn: Mr. C. K. Miller

Laboratory No. 755253

Report on: Eight (8) Samples Submitted for Chemical Analysis

Authorization:

Samples were received over a period of time for proximate analysis. The samples have the following identification:

Identification:	Analysis
Bag No. AL	Proximate Analysis Only
Bag No. AK	Proximate Analysis Only
Bag No. AM	Proximate Analysis Only
Bag No. AN	Proximate Analysis Only
Bag No. AO	Proximate Analysis Only
Bag No. AP	Proximate Analysis Only
Bag No. AQ	Proximate Analysis Only
Bag No. AR	Proximate Analysis Only

The proximate analysis was performed in accordance with ASTM Procedure D-271, Part 19, 969 Edition; American Public Works Association of Refuse, Appendix A; and Standard Methods 3th Edition, 1971. The analysis were performed as follows:

Analysis Parameter	Procedure	Temperature (°C)
Moisture	APWA	75°
Ash	ASTM D-271	750°
Volatile Matter	ASTM D-271	900°
Fixed Carbon	By Definition ASTM D-271	
BTU/lb.	Paar Bomb Colorimeter	

The samples were placed loosely in a beaker and dried at 75°C for the moisture content. The dried samples were then placed in a Waring Blender and blended as fine as possible. The samples were then redried at 75° and all analyses except the moisture determinations were obtained using the dried sample.

The results of the analysis were as follows:

Sample No.	AK	AL	AM	AN
Moisture, %	52.58	57.19	49.08	47.08
Ash, %	4.22	3.58	4.21	6.11
Volatile Matter, %	31.33	39.10	39.39	41.37
Fixed Carbon, %	11.87	.13	7.32	5.44

(continued)

Sample No.	AL	AL	AM	AN
BTU/lb. (dry sample) Trial 1	8000	6744	9083	7607
BTU/lb. (dry sample) Trial 2	8037	6805	9031	7655
BTU/lb. (dry sample) Average	8016	6775	9057	7631

Sample No.	AO	AP	AQ	AR
Moisture, %	50.56	53.79	53.53	52.59
Ash, %	5.10	5.85	3.67	4.16
Volatile Matter, %	39.54	36.32	39.19	38.66
Fixed Carbon, %	4.80	4.04	3.61	4.59
BTU/lb. (dry sample) Trial 1	8308	8554	8152	8189
BTU/lb. (dry sample) Trial 2	8194	8552	8238	8130
BTU/lb. (dry sample) Average	8281	8553	8195	8160

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Clyde W Kayser
Clyde W. Kayser
Chemist, Instrumentation Lab.
Chemical & Metallurgical Div.

3- Client
2- File
CWK/jp

LABORATORY REPORT

November 18, 1971

Report to: A. M. Kinney, Inc. - Consulting Engineers - 2912 Vernon Place -
Cincinnati, Ohio 45219 Attn: Mr. Carl Miller

Report on: Two (2) Samples Submitted for Analysis

Laboratory No.: 754982 **Your Mark:**

Analysis of two (2) samples of sand were received for analysis. The samples were identified as follows:

Identification: Clear Sand
Reactor Sand

The samples were analyzed in accordance with Scott's Standard Methods; ASTM Vol. 1970 Edition, Atomic Absorption Spectrophotometer and Infrared Spectrophotometer Procedures.

The sieve analysis of the two sand samples was accomplished in accordance with AS Procedure D 1140 Volume 11, 1970 Edition and utilizing specific size sieves. The resu were as follows:

Sample No.	Clear Sand		Reactor Sand	
Sieve No., US	Wt. Retained	% Passing	Wt. Retained	% P
3/8	0	100.00	0	100
4	0	100.00	51.9	92.
8	0	100.00	125.3	82.
20	43.0	94.04	267.4	62.
30	246.1	65.85	344.4	51.
40	571.4	20.71	471.8	33.
50	621.0	13.83	636.9	9.6
70	690.8	4.14	696.8	1.1
100	714.8	0.81	703.4	0.2
270	720.0	0.09	704.0	0.1
325	720.0	0.09	704.1	0.1
Pan	720.0	0.09	704.6	0.0
Sample Size, gms	720.6		705.1	

The chemical analysis of the samples were accomplished in accordance with Scott's Standard Methods Volumes 1 and 2 and Atomic Absorption Spectrophotometer Procedures. results of the analysis were as follows.

(continued)

Sample No.	Clear Sand	Reactor Sand
SiO_2, %	94.76	70.76
Loss on Ignition, %	0.20	0.16
Moisture, %	0.73	0.37
Sulfur, %	0.006	0.033
P_2O_5, %	0.014	0.316
CaO, %	0.42	0.316
MgO, %	0.07	8.68
Fe_2O_3, %	0.54	12.93
Al_2O_3, %	0.38	2.12

All data is reported on dry basis.

The glass content of the materials were analyzed by Infrared and indices of refraction. The results of the analysis indicate the following.

Clear Sand	Index of Refraction	Approximate Concentration
Quartz	1.5442	69.5
Chalcedony	1.531	30.5
Total		100.0

The α and β quartz are the major concentration with the breakdown being as follows:

α Quartz, %	75
β Quartz	10
α Tridymite	10
β Tridymite	3
α Cristobalite	2
Total	100.0

The reactor sand results are as follows:

	Index of Refraction	Approximate Concentration
Quartz	1.5439	47.0
Chalcedony	1.539	53.0
Total		100.0

α Quartz, %	40
β Quartz, %	20
α Tridymite	17
β Tridymite	8
α Cristobalite	10
β Cristobalite	5
	100.0

The chalcedony of the clear and reactor sand are composed of the following breakdown.

		Clear Sand	Reactor Sand
Hematite	Fe_2O_3	43.5	54.0
Anorthite	$CaAl_2Si_2O_8$	22.0	6.5
Enstatite	$MgSiO_3$	9.5	14.8
Mullite	$Al_6Si_2O_{13}$	25.0	24.7
Total		100.0	100.0

Determining the glass content of the clear and reactor sand is extremely difficult and the best estimates are that any glass in the sample would be as follows:

Sample No.	Glass, %	Index of Refraction
Clear Sand	Trace (< 0.5)	1.52 - 1.53
Reactor Sand	1.0	1.54 - 1.55

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Robert S. Jenkins

Robert S. Jenkins
Manager, Organic Chemistry Lab.
Chemical & Metallurgical Div.

3- Client
2- File
RSJ/jp

LABORATORY REPORT

October 20, 1971

Report to:	A. M. Kinney, Inc. - Consulting Engineers - 2912 Vernon Place - Cincinnati, Ohio 45219 Attn: Mr. C. K. Miller
Report on:	Analysis of Three (3) Residue Samples
Laboratory No.	753750
Authorization:	

Three (3) residue samples were received for analysis. The samples and analysis requested were identified as follows:

Sample No.	Analysis
Pulp Screened and Organic Rejects	Proximate and Ultimate
Pulp Unscreened and Organic Rejects	Proximate and Ultimate
Screen Rejects	Proximate and Ultimate

The proximate and ultimate analysis were performed in accordance with ASTM Procedure D 271, and American Public Works Association of Refuse, Appendix A. The analysis were performed as follows:

Analysis Parameter	Procedure
Moisture	APWA
Ash	ASTM D 271
Volatiles	ASTM D 271
Fixed Carbon	Definition ASTM D 271
BTU	Parr Bomb Colorimeter
Carbon	ASTM D 271
Hydrogen	ASTM D 271
Oxygen	Definition ASTM D 271
Nitrogen	Kjeldahl
Sulfur	Sulfur Analyzer
Fluorine	SPADNS Determination
Chlorine	Mercuric Nitrate
Aluminum	Atomic Absorption

The results of the analysis were as follows:

Sample No.	Pulp Screened	Pulp Unscreened	Screen Rejects
Moisture, %	75.07	78.19	30.59
Volatiles, %	21.45	18.66	32.39
Ash, %	0.65	1.96	5.80
Fixed Carbon	2.83	1.19	31.22

A. M. Kinney, Inc.
Page 2
Lab. No. 753750

Sample No.	Pulp Screened	Pulp Unscreened	Screen Rejects
BTU (Dry Sample), BTU/lb.	8930	9356	5466
BTU (Dry Sample), BTU/lb.	9005	9397	5477
BTU Average, BTU/lb.	8967	9377	5472
Carbon, %	8.71	9.85	42.68
Hydrogen, %	1.20	0.91	5.91
Oxygen, %	Remainder	Remainder	Remainder
Nitrogen, %	0.41	0.15	0.37
Sulfur, %	0.18	0.09	0.25
Fluorine, mg/l	0.06	0.02	0.09
Chlorine, mg/l	0.08	0.07	0.19
Aluminum, mg/l	0.59	0.38	0.96

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Robert S. Jenkins

Robert S. Jenkins
Manager, Organic Chemistry Laboratory
Chemical & Metallurgical Division

Client - 3
File - 2
RSJ/jp

LABORATORY REPORT

October 1, 1971

Report to: A. M. Kinney, Inc. - Consulting Engineers -
2912 Vernon Place - Cincinnati, Ohio 45219

Laboratory No. 753127

Report on: Analysis of Residue Samples

Authorization:

Samples were received periodically for Proximate and Ultimate analysis. The samp and analysis were identified and performed as follows:

Identification:	Analysis Requested
Sample No. W	Proximate and Ultimate
Sample No. X	Proximate
Sample No. Y	Proximate
Sample No. Z	Proximate and Ultimate
Sample No. AA	Proximate and Ultimate
Sample No. AB	Proximate
Sample No. AC	Proximate and Ultimate
Sample No. AD	Proximate and Ultimate
Sample No. AE	Proximate
Sample No. AF	Proximate
Sample No. AG	Proximate
Sand	Sieve Analysis

Identification:	Analysis Requested
Water Samples	pH, BOD and Solids

The proximate and ultimate analysis were performed in accordance with ASTM Procedure D-271, Part 19, 1969 Edition, American Public Works Association of Refuse, Appendix A and Standard Methods, 13th Edition, 1971. The analysis were performed as follows:

Analysis Parameter	Procedure	Temperature, °C
Moisture	APWA	75
Ash	ASTM D-271	750
Volatiles	ASTM D-271	950
Fixed Carbon	Definition ASTM D-271	
BTU	Parr Bomb Colorimeter	
Carbon	ASTM D-271	
Hydrogen	ASTM D-271	
Oxygen	Definition ASTM D-271	
Nitrogen	Kjeldahl	
Sulfur	Sulfur Analyzer	
Fluorine	SPADNS Determination	
Chlorine	Mercuric Nitrate	
Aluminum	Atomic Absorption	
BOD	Standard Methods, 13th Ed, 1971	
Solids	Standard Methods, 13th Ed., 1971	

The samples were placed loosely in a container and dried at 75°C. The dried samples were placed in a Waring Blender and blended as fine as possible. The samples were then redried at 75°C and all analysis except moisture analyzed on the dried sample.

The results of the analysis were as follows:

Sample No.	W	X	Y	Z	AA	AB	AC
Moisture, %	45.07 44.5	44.93 44.86	53.07 52.53	49.51	49.66	51.09	49.99
Volatiles, %	43.86	43.34	37.49	39.09	38.10	37.34	38.71
Ash, %	5.37	5.31	4.37	6.53	3.65	5.19	6.60
Fixed Carbon, %	6.23	6.49	5.61	4.87	8.61	6.08	4.70
BTU (Dry Sample)	7754	7736	7457	7166	7406	7225	7226
BTU (Dry Sample)	7671	7721	7487	7203	7533	7128	7158
BTU Average	7713	7729	7472	7185	7470	7177	7192
Carbon, %	21.75			21.82	27.31		20.41
Hydrogen, %	2.04			3.52	4.75		1.76
Oxygen, %	Rem.			Rem.	Rem.		Rem.
Nitrogen, %	0.15			0.09	0.15		0.21
Sulfur, %	0.18			0.10	0.19		0.15
Fluorine, mg/l	0.03			0.08	0.07		0.08
Chlorine, mg/l	0.15			0.12	0.12		0.19
Aluminum, mg/l	0.65			.57	.64		0.50

Sample No.	AD	Q	R	AE	AF	AG
Moisture, %	56.53	53.09	54.83	54.17	56.26	51.89
Volatiles, %	33.09	35.88	35.49	33.59	32.77	38.42
Ash, %	5.67	4.91	5.00	6.83	5.36	5.76
Fixed Carbon, %	4.71	6.12	4.68	5.41	5.61	3.92
BTU (Dry Sample)	7047	-	-	7397	7371	7099
BTU (Dry Sample)	7196	-	-	7477	7234	6933
BTU Average	7122	-	-	7437	7303	7016

ASH ANALYSIS, ~~mg/l~~%

Sample No.	1	D	F
SiO_2	Remainder	Remainder	Remainder
Al_2O_3	.86	.39	.07
Fe_2O_3	.20	.18	.028
CaO	.082	.08	.011
MgO	.089	.07	.011
Na_2O	.15	.12	.018
K_2O	.072	.05	.006
Sulfate, SO_4, mg/l	48.0	68.5	43.5
Zinc as Zn	.004	.001	.001
Chloride	2.13	2.13	66.4
Lead as Pb	.003	.001	.001

The sand sample was submitted to gradation after oven drying 637 grams and washing over a No. 325 Sieve and redrying and then mechanically shaken to give the following results:

Sieve Size (U.S.)	% Finer by Weight
3/8"	100
#4	98
#5	97
#6	96
#8	94
#10	93
#12	91
#16	88
#20	82
#30	70
#40	44
#50	14
#60	5
#70	2
#80	0.8
#100	0.6
#140	0.5
#200	0.5
#270	0.3
#325	0.3

The water samples were analyzed in accordance with Standard Methods for Water and Wastewater, 13th Edition, 1971 with the following results:

Sample No.	Ash*	White	Waste
pH	9.30	5.10	5.10
5 Day BOD, mg/l	-	> 1540	> 1460
Total Solids, mg/l	11,922		
Total Volatile Solids, mg/l	1,448		
Total Suspended Solids, mg/l	15,410	4,020	4,800
Total Dissolved Solids, mg/l	2,960	2,250	2,480
Settleable Solids, ml/l	28	240	210

* The ash sample had sand present and was therefore impossible to get representative sample.

Thank you for this opportunity to be of service.

Respectfully submitted,

BOWSER-MORNER Testing Laboratories, Inc.

Edward W. Drinkuth

Edward W. Drinkuth, Vice-President
Director, Chemical & Metallurgical Division

Client - 3
File - 2
EWD/jp

APPENDIX B - A. M. KINNEY, INC., TEST REPORTS
(30 PAGES)

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE:	August 14, 1972
COLLECTED BY:	N. W. Okel DATE: August 2, 1972
ANALYZED BY:	N. W. Okel

MAGNETIC FRACTION:

WEIGHT OF SAMPLE:	11.22 pounds
ALL STEEL CANS:	50.0%
STEEL CANS/ALUMINUM TOPS:	10.6%
OTHER MAGNETIC MATERIALS:	37.6%
DESCRIPTION:	Wire, nails, tools, door hardware
UNACCOUNTED FOR:	1.8%

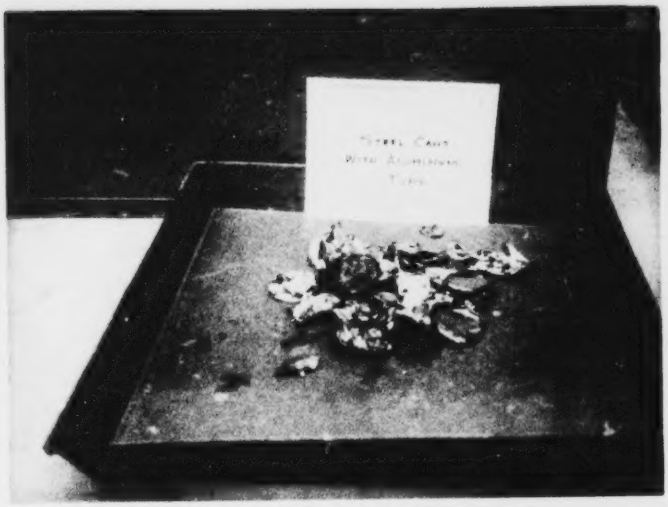
MIXED SAMPLE MAGNETIC FRACTION
8.2.72

STEEL CANS FRACTION
8.2.72

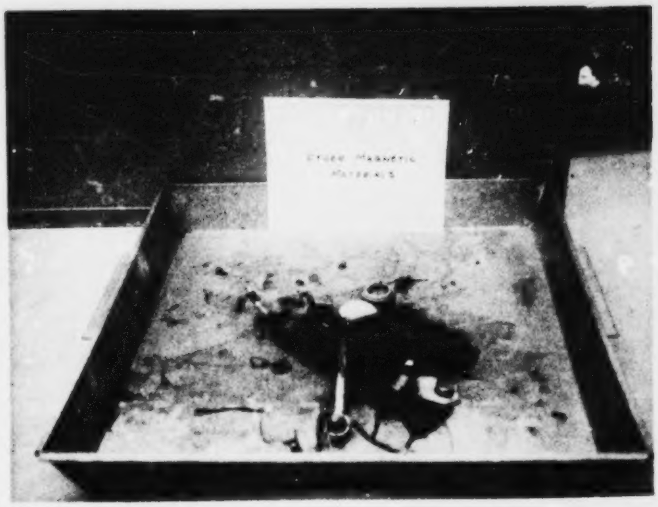
REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

NON-MAGNETIC FRACTION:

SIZE SAMPLE:	11.82 pounds
MOISTURE:	13.0% free H_2O
ORGANICS:	N.D.%
MAGNETIC METALS:	0%
ALUMINUM:	7.7%
OTHER METALS:	11.1%
GLASS:	31.5%
RUBBER MATERIALS:	10.8%
PLASTICS:	4.6%
OTHER:	23.7% includes organic
DESCRIPTION:	Paper, wood, ceramics, stones


STEEL CANS
WITH ALUMINUM
TOPS

JUNK REMOVER REJECTS


OTHER MAGNETIC
MATERIALS

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE	July 10, 1972		
COLLECTED BY:	N. W. Okel	DATE:	July 6, 1972
ANALYZED BY:	N. W. Okel		

MAGNETIC FRACTION:

WEIGHT OF SAMPLE:	18.42 pounds
ALL STEEL CANS:	69.3%
STEEL CANS/ALUMINUM TOPS:	5.7%
OTHER MAGNETIC MATERIALS:	24.3%

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

NON-MAGNETIC FRACTION:	(July 6, 1972)
SIZE SAMPLE:	13.2 pounds
MOISTURE:	N.D.%
ORGANICS:	N.D.% very low
MAGNETIC METALS:	1.1%
ALUMINUM:	4.4%
OTHER METALS:	4.2%
GLASS	37.0%
RUBBER MATERIALS:	2.8%
PLASTICS:	0.8%
OTHER:	48.5%
DESCRIPTION:	Mostly large stones and gravel
UNACCOUNTED FOR:	1.2%

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE:	June 21, 1972
COLLECTED BY:	N. W. Okel DATE: June 8, 1972
ANALYZED BY:	N. W. Okel

MAGNETIC FRACTION:

WEIGHT OF SAMPLE:	22.39 pounds
ALL STEEL CANS:	67.1%
STEEL CANS/ALUMINUM TOPS:	3.5%
OTHER	26.4%
DESCRIPTION:	Heavy gage sheet metal, wire, nails, etc.
NONMAGNETIC MATERIALS AND WATER:	3.0%

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

NON-MAGNETIC FRACTION:	(Sample June 8, 1972)
SIZE SAMPLE:	12.33 pounds
MOISTURE:	8.4%
ORGANICS:	42.4%*
MAGNETIC METALS:	2.8%
ALUMINUM:	9.6%
OTHER METALS:	1.3%
GLASS:	23.2%
RUBBER MATERIALS:	7.4%
PLASTICS:	4.9%
OTHER:	*%
DESCRIPTION:	*Organics includes other materials such as stones, ceramics, etc.

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE:	May 15, 1972
COLLECTED BY:	N. W. Okel DATE: May 2, 1972
ANALYZED BY:	N. W. Okel

MAGNETIC FRACTION:

WEIGHT OF SAMPLE:	41.05 pounds
ALL STEEL CANS:	67.6%
STEEL CANS/ALUMINUM TOPS:	2.4%
OTHER	27.4%
DESCRIPTION:	Automobile oil filters (2), wire, nails, etc.
WATER AND UNACCOUNTED FOR: (RAGS, PAPER, OTHER NON-MAGNETIC MATERIAL)	2.6%

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

NON-MAGNETIC FRACTION:

SIZE SAMPLE:	14.16 pounds
MOISTURE:	0% free
ORGANICS:	66.3%
MAGNETIC METALS:	0.8%
ALUMINUM:	10.2%
OTHER METALS:	2.5%
GLASS:	7.4%
RUBBER MATERIALS:	8.0%
PLASTICS:	4.4%
OTHER:	0.4%
DESCRIPTION:	Unaccounted for

NOTE: No free water present. However organic fraction very wet - probably 50% to 60% moisture.

Samples taken after Hydrapulper had been out of service for broken motor shaft. May account for high organic content.

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE: March 28, 1972

COLLECTED BY: N. W. Okel DATE: March 23, 1972

ANALYZED BY: N. W. Okel

REMARKS: Free water = 23%

MAGNETIC FRACTION:

WEIGHT OF SAMPLE: 15.70 pounds (dry)

ALL STEEL CANS: 75.0%

STEEL CANS/ALUMINUM TOPS: 10.5%

OTHER MAGNETIC MATERIALS: 12.5%

DESCRIPTION: Wire, nails, miscellaneous unidentifiable

NONMAGNETIC MATERIAL: 1.02%

UNACCOUNTED FOR: 0.98%

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

NON-MAGNETIC FRACTION:

SIZE SAMPLE:	13.84 pounds
FREE MOISTURE:	11.6%
ORGANICS:	25.5%
MAGNETIC METALS:	0.6%
ALUMINUM:	3.0%
OTHER METALS:	7.5%
GLASS:	39.3%
RUBBER MATERIALS:	8.0%
PLASTICS:	4.2%
UNACCOUNTED FOR:	0.1%
DESCRIPTION:	"Organics" include other material such as stones, ceramics, etc.

NOTE: Organics and moisture not determined by heating. Size of material too large to obtain representative small sample.

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE:	March 7, 1972
COLLECTED BY:	N. W. Okel DATE: February 17, 1972
ANALYZED BY:	N. W. Okel
REMARKS:	Free water present = 5.1%

MAGNETIC FRACTION:

WEIGHT OF SAMPLE:	21.05 pounds (air dry)
ALL STEEL CANS:	85.7%
STEEL CANS/ALUMINUM TOPS:	2.3%
OTHER:	9.2%
DESCRIPTION:	Wire, nails, small hardware
NON-MAGNETIC MATERIAL:	1.6%+

NOTE: Non-magnetic material mainly organics and plastic, and percent reported is that which could be easily separated.

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

SAMPLE DATE: February 17, 1972

NON-MAGNETIC FRACTION:

SIZE SAMPLE: 14.23 pounds

MOISTURE: N.D.% (air dried)

ORGANICS: 50.8%

MAGNETIC METALS: 1.5%

ALUMINUM: 10.6%

OTHER METALS: 6.0% (including 1.22 Cal. Bul.)

GLASS: 12.7%

RUBBER MATERIALS: 11.6%

PLASTICS: 5.5%

UNACCOUNTED FOR: 1.3%

DESCRIPTION: "Organics" contains "other materials" such as:

Ceramics
Stones
Wood
Paper
Etc.

NOTE: Organics and moisture not determined by heating. Size of fractions too large to obtain representative small sample.

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

DATE: January 31, 1972

COLLECTED BY: N. W. Okel DATE: January 25, 1972

ANALYZED BY: Ron Reinking

MAGNETIC FRACTION:

WEIGHT OF SAMPLE: 25.32 pounds

ALL STEEL CANS: 72.3%

STEEL CANS/ALUMINUM TOPS: 7.2%

OTHER 20.4%

DESCRIPTION: Automotive parts, nuts, bolts, wire

REPORT OF ANALYSIS OF JUNK REMOVER REJECTS

NON-MAGNETIC FRACTION:

SIZE SAMPLE:	595.5 grams
MOISTURE:	22.5%
ORGANICS:	10.2% O.D. basis
MAGNETIC METALS:	0.3% O.D. basis
ALUMINUM:	2.3% O.D. basis
OTHER METALS:	4.2% O.D. basis
GLASS:	63.8% O.D. basis
RUBBER MATERIALS:	6.5% O.D. basis
PLASTICS:	1.1% O.D. basis
OTHER: (INCLUDING ORGANICS)	21.9% O.D. basis
DESCRIPTION:	Wood, rocks, fibrous material, organics, etc.

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE: August 16, 1972

COLLECTED BY: N. W. Okel DATE: August 2, 1972

ANALYZED BY: N. W. Okel

RESULTS:

MOISTURE: 19.6%

ORGANICS: 3.1%

LESS THAN NO. 10 SIZE: 9.4%

RETAINED ON NO. 10: 21.6%

RETAINED ON ON. 4: 69.0%

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS: 46.8% of total dry

GREEN GLASS: 6.7% of total dry

AMBER GLASS: 19.4% of total dry

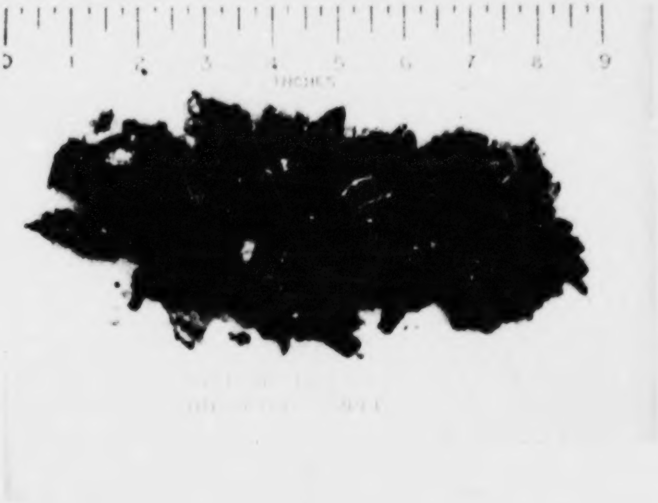
MAGNETIC METALS: 1.7% of total dry

ALUMINUM: 0.8% of total dry

OTHER METALS: 1.5% of total dry

LARGE STONES: 3.1% of total dry

UNCLASSIFIED: 20.0% of total dry
(CERAMICS, WOOD, PAPER,
BONES, PLASTICS, RUBBER)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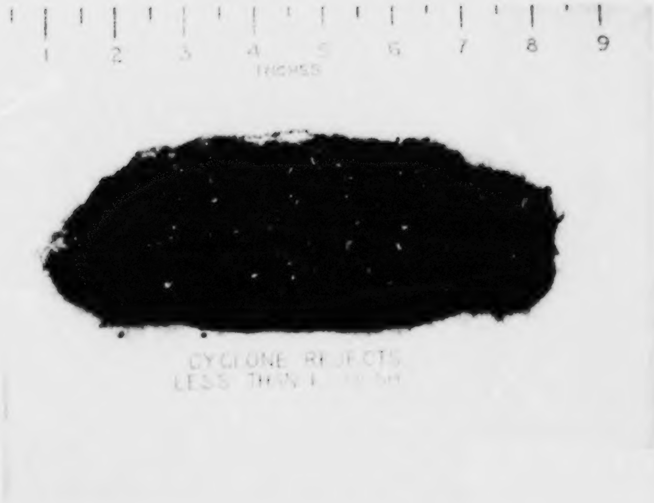
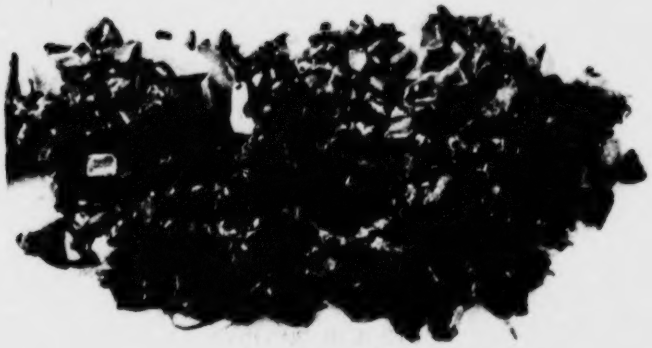
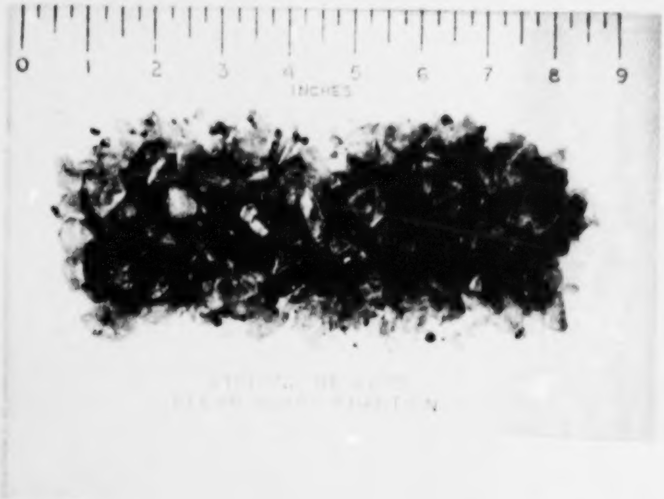

1 2 3 4 5 6 7 8 9
INCHES
CYCLONE REJECTS
LESS THAN 1

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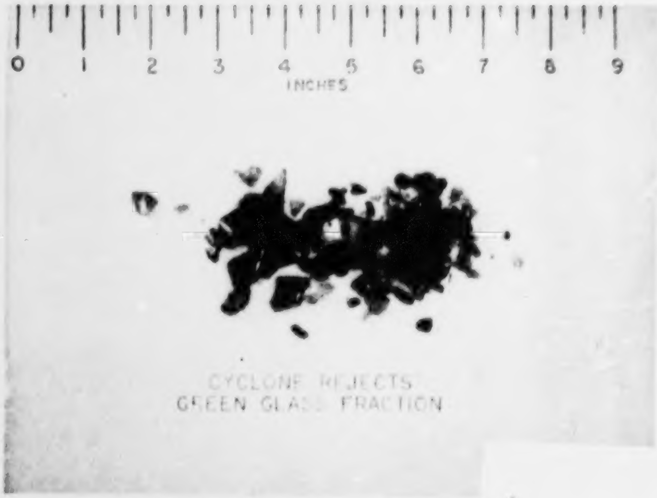
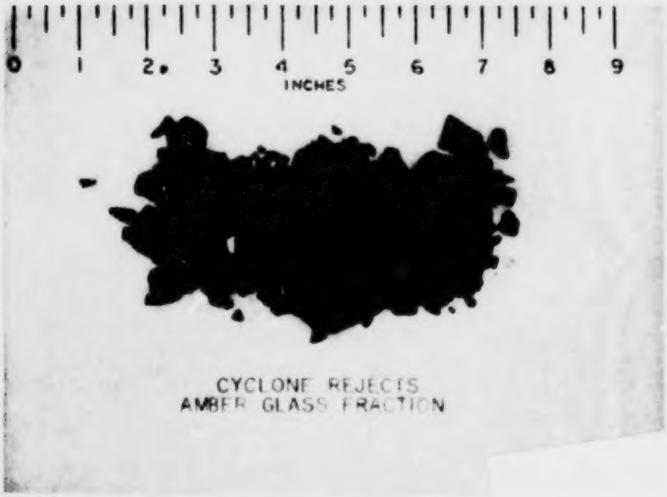
INCHES
FRACTION


0 1 2 3 4 5 6 7 8 9
INCHES
CYCLONE REJECTS
GREEN GLASS FRACTION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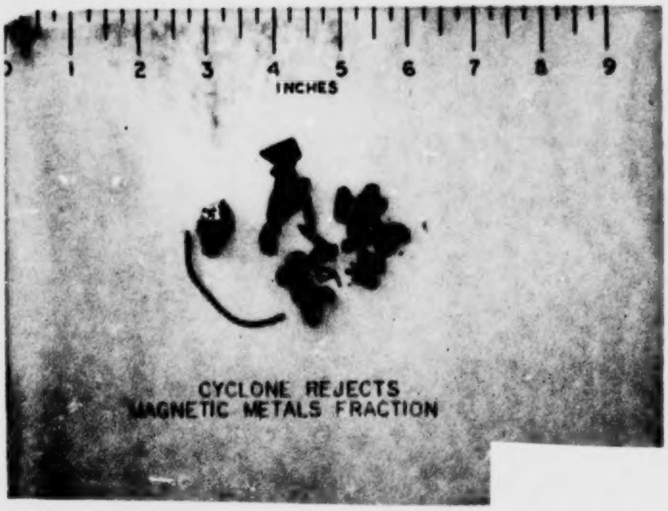
INCHES

CYCLONE REJECTS
AMBER GLASS FRACTION


0 1 2 3 4 5 6 7 8 9
INCHES

CYCLONE REJECTS
MAGNETIC METALS FRACTION

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2
3
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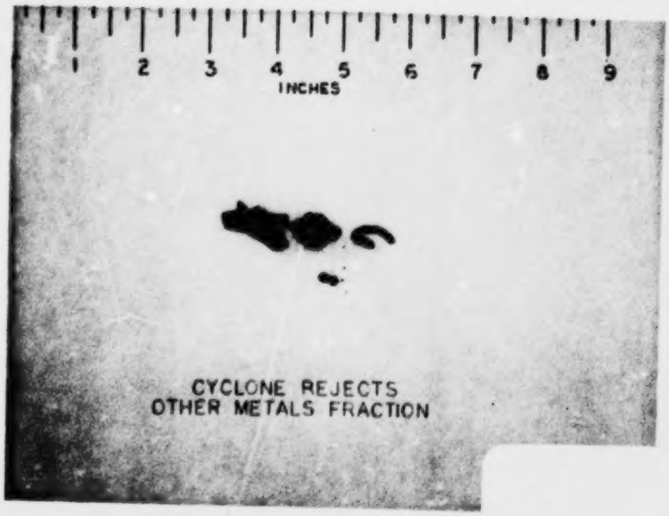
8
9
INCHES

CYCLONE REJECTS
ALUMINUM FRACTION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INCHES

CYCLONE REJECTS
OTHER METALS FRACTION

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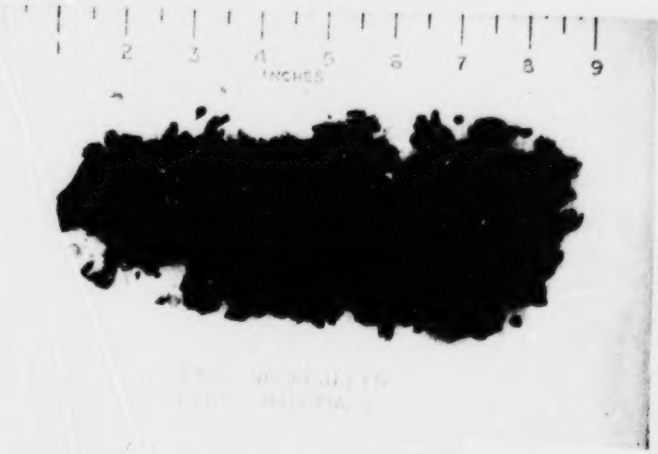
INCHES

CYCLONE REJECTS
STONES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9
INCHES

CYCLONE REJECTS
[illegible] MATERIAL

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE: July 10, 1972

COLLECTED BY: N. W. Okel DATE: July 6, 1972

ANALYZED BY: N. W. Okel

RESULTS:

MOISTURE: 20.2%

ORGANICS: 3.9%

LESS THAN NO. 10 SIZE: 8.3%

RETAINED ON NO. 10: 23.9%

RETAINED ON NO. 4: 67.8%

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS: 40.1% of dry fraction

GREEN GLASS: 4.8% of dry fraction

AMBER GLASS: 18.1% of dry fraction

MAGNETIC METALS: 2.3% of dry fraction

ALUMINUM: 3.0% of dry fraction

OTHER METALS: 0.2% of dry fraction

LARGE STONES: 4.3% of dry fraction

UNCLASSIFIED: 26.9% of dry fraction

UNACCOUNTED FOR: 0.3%

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE:	June 21, 1972		
COLLECTED BY:	N. W. Okel	DATE:	June 8, 1972
ANALYZED BY:	N. W. Okel		

RESULTS:

MOISTURE:	14.9%
ORGANICS:	10.1%
LESS THAN NO. 10 SIZE:	14.5%
RETAINED ON NO. 10:	23.0%
RETAINED ON NO. 4:	62.5%

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS:	34.5% of dry fraction
GREEN GLASS:	4.1% of dry fraction
AMBER GLASS:	19.5% of dry fraction
MAGNETIC METALS:	7.1% of dry fraction
ALUMINUM:	2.3% of dry fraction
OTHER METALS:	0.4% of dry fraction
LARGE STONES:	3.7% of dry fraction
UNCLASSIFIED:	28.4% of dry fraction

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE: May 16, 1972

COLLECTED BY: N. W. Okel DATE: May 2, 1972

ANALYZED BY: N. W. Okel

REMARKS: Sampled after Hydrapulper had been down to replace broken motor shaft.

RESULT:

MOISTURE: 13.0%

ORGANICS: 13.6% dry

LESS THAN NO. 10 SIZE: 13.3% dry

RETAINED ON NO. 10: 24.3% dry

RETAINED ON NO. 4: 62.5% dry

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS: 38.1% of dry fraction

GREEN GLASS: 4.3% of dry fraction

AMBER GLASS: 14.7% of dry fraction

MAGNETIC METALS: 3.1% of dry fraction

ALUMINUM: 2.9% of dry fraction

OTHER METALS: 1.0% of dry fraction

LARGE STONES: 0% of dry fraction

UNCLASSIFIED: 35.9% of dry fraction

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE: March 8, 1972

COLLECTED BY: N. W. Okel DATE: March 1, 1972

ANALYZED BY: N. W. Okel

REMARKS: Percent composition is percent of +10 mesh fraction. It is also percent of total if assumption that -10 mesh fraction is essentially the same composition.

RESULTS:

MOISTURE: 15.25%

ORGANICS: (LOSS ON IGNITION) 8.5% O.D. basis

LESS THAN NO. 10 SIZE: 10.0%

RETAINED ON NO. 10: 28.4%

RETAINED ON NO. 4: 62.0%

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS: 40.9% of +10 mesh O.D. basis

GREEN GLASS: 5.9% of +10 mesh O.D. basis

AMBER GLASS: 18.0% of +10 mesh O.D. basis

MAGNETIC METALS: 4.1% of +10 mesh O.D. basis

ALUMINUM: 3.0% of +10 mesh O.D. basis

OTHER METALS: 1.1% of +10 mesh O.D. basis

LARGE STONES: 0.9% of +10 mesh O.D. basis

UNCLASSIFIED: (INCLUDES ORGANICES, STONES, PLASTICS, RUBBER, ETC.) 25.6% of +10 mesh O.D. basis

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE: January 28, 1972

COLLECTED BY: N. W. Okel DATE: January 25, 1972

ANALYZED BY: Ron Reinking

REMARKS: Carbon residue present after organics test

RESULTS:

MOISTURE: 14.4%

ORGANICS: 5.4%

LESS THAN NO. 10 SIZE: 12.7%

RETAINED ON NO. 10: 26.1%

RETAINED ON NO. 4: 61.5%

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS: 37.1% of total

GREEN GLASS: 4.5% of total

AMBER GLASS: 25.1% of total

MAGNETIC METALS: 2.7% of total

ALUMINUM: 2.0% of total

OTHER METALS: 0.3% of total

LARGE STONES: 6.8% of total

UNCLASSIFIED: 21.5% of total

REPORT ON ANALYSIS OF LIQUID CYCLONE REJECTS

DATE: January 28, 1972

COLLECTED BY: N. W. Okel DATE: January 19, 1972

ANALYZED BY: Ron Reinking

REMARKS: Carbon residue left from burning off organics.

RESULTS:

MOISTURE: 15.5%

ORGANICS: 4.2%

LESS THAN NO. 10 SIZE: 10.2% of dry sample

RETAINED ON NO. 10: 27.8% of dry sample

RETAINED ON NO. 4: 62.5% of dry sample

COMPOSITION OF MATERIAL RETAINED ON NO. 4 AND 10

CLEAR GLASS: 37.4% of total

GREEN GLASS: 4.3% of total

AMBER GLASS: 22.4% of total

MAGNETIC METALS: 3.0% of total

ALUMINUM: 2.0% of total

OTHER METALS: 1.0% of total

LARGE STONES: 6.2% of total

UNCLASSIFIED: (PLASTICS, CERAMICS, WOOD, FIBERS, ETC.) 22.1% of total

UNACCOUNTED FOR: 1.6%

APPENDIX C - THE BLACK CLAWSON COMPANY STATUS REPORTS
(102 PAGES)

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best available copy.

FRANKLIN PLANT OPERATING REPORT FOR MONTH OF JULY, 1972

1. OPERATING DATA

	July Actual	Previous Month	Design
Refuse Received			
Tons weighed	792	996	1,160
Tons Std fee vehicles	64	56	-
Tons total	856	1,052	1,160
Refuse Processed			
Tons	830	1,030	1,160
% of received	97	98	100
Fiber Recovered			
Tons, AD	25.8	4.4	233
% BOR	3.1	0.4	20
Tons Shipped	0	7	233
Ferrous Metal Recovered			
Tons	65	70	69
% BOR	7.8	6.8	6.0
Material Landfilled			
Tons, nonprocessable	26	22	0
% of received refuse	3	2	0
Tons process residue	121	141	108
% of processed refuse	14.6	13.7	9.5
Effluent to MCD			
Millions of gallons	1.8	.5 (6/19-6/30)	.5
GPM	255	125	50
Electricity			
Total KWH	151,000	171,000	179,000
KWH/Ton Processed	181	165	154
Water			
Millions of gallons	2.3	2.2	
GPM	325	233	
Gallons/ton	2,780	2,130	
Operating Time			
Days	20	22	22
Hours			
Hydrapulper	117	156	168
Reactor	110	147	168
Fibreclaim	46	15	168

	July Actual	Previous Month	Design
Production Rates			
Hydrapulper, TPH	7.1	6.6	6.8
Reactor #/min.	126	120	131
Fibreclaim TPH	0.6	0.3	1.3

2. SAFETY

a) No accidents were reported in the month.

b) Unsafe operating in plant are:

1) Some pieces of equipment still need guards.
2) Floors are slippery in some areas.

c) Past plans and action.

1) Finish guards - not finished yet.
2) Layout trenches - nothing done.

d) Plans for future.

1) Finish guards.
2) Layout trenches or drain around compressors.

3. HOUSEKEEPING

a) Main housekeeping problems are:

1) Floor around magnetic conveyor.
2) Floor under conveyor and around air compressors.
3) Grates due to high sump level.

b) Past plans and action

1) Design new shields around magnetic separator - tried some new shields, helped a little.
2) Design rake for conveyor discharge or buy new hoppers under conveyor - bought new hoppers, will field fabricate rake.
3) Try new deodorants to combat odor-odor now under control.

c) Future Plans

1) Fix water leak at water meter.
2) Order new pump for sump #122.
3) Field design and fabricate rake for conveyor.

4. PULP QUALITY AND PRODUCTION

a) Grease extraction tests were made during July to test clarifier performance. Extractables ranged from 1.8% to 4.0% based on pulp.

b) Past plans and action.

   1) Shake down new equipment and determine yield. - New equipment operates satisfactorily, however, yield still low due to loss at thickening equipment. Raising consistency may help.

c) Future plans.

   1) Determine reason for low yield and fix.

5. OPERATION

a) Production Rate.

   1) The Hydrapulper production rate was 7.1 tons/hour. This is an 8% increase over June.
   2) The Fibreclaim production rate averaged 0.6 ton/hour. This is twice the rate of June, but still only 50% of design.
   3) The reactor operating rate was 126 #/min.

b) Problems

   1) Stators coming loose was a problem in July. A new extraction chamber will be installed in August, this should help.
   2) The reactor cone and support is scheduled to be installed in August. Also new refractory will be installed in the scrubber inlet.
   3) Yield is a problem in Fibreclaim.

c) Maintenance (non routine)

   1) The conveyor variable speed drive had a bearing go bad.

d) Power

Total power consumption for July was 151,000 KWH. This is 181 KWH/Ton which is 27 KWH/ton over design. The increase over June is probably due to increased running time of Fibreclaim and its increased Hp demand.

e) Labor

Most overtime was considered normal for operations.

5. OPERATION - Continued

   f) Unusual costs.

   No new unusual costs were incurred during the month.

6. SUMMARY

   a) The stators on the pulper and the conveyor drive were the major problem in Hydrasposal. The rotor was not changed during the entire month.

   b) The scrubber and separator became plugged repeatedly due to refractory coming out of scrubber area.

   c) Fibreclaim is easier to run with the new equipment, but yield is still unsatisfactory. Laboratory will assist in determining reason for low yield.

E. T. Blakley

dp

8/30/72

WEEK OF 8/5 THRU 8/11

Refuse Received, weighed	202	Tons	**DESIGN**
not weighed-estimated	16	Tons	
Total	218	Tons	267
Refuse Processed	213	Tons	267
Process Rate	6.9	Tons/hr.	6.7
Fiber Collected and Sold	2.5	Tons (AD)	53
Production Rate	.5	Tons/hr	1.3
Fiber Recovered OD Basis	1.2	%BOR*	20%
Magnetic Metal Recovered OD Basis	16.6	Tons	19
	7.8	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	8.9	Tons	8
	4.0	%BOR	3%
Cyclone Rejects OD Basis	18.7	Tons	27
	8.9	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	54.3	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	53.1	%BOR	35
Pulper Operating Time	31	Hours	40
Reactor Operating Time	24	Hours	40
Fibreclaim Operating Time	5	Hours	40
Electricity Used Total	32400	KW Hrs.for Plant	41,250
Rate	152	KW Hrs/Ton	154
Effluent to MCD	395,000	Gallons	120,000
	210	GPM	50
Oil to Reheat Reactor Total	340	Gallons	
Rate	1.6	Gallons/Ton	
Water Used Total	560,000	Gallon	
Rate, Flow	300	GPM	
Rate, per Ton	2640	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

Reproduced from best available copy.

WEEK OF 7/29 THRU 8/4

Refuse Received, weighed		177	Tons	**DESIGN**
	not weighed-estimated	15	Tons	
	Total	192	Tons	267
Refuse Processed		187	Tons	267
Process Rate		7.2	Tons/hr.	6.7
Fiber Collected and Sold		3.3	Tons (AD)	53
Production Rate		.5	Tons/hr	1.3
Fiber Recovered OD Basis		1.8	%BOR*	20%
Magnetic Metal Recovered OD Basis		15.2	Tons	19
		8.1	%BOR	7%
Nonmagnetic Junker Rejects OD Basis		7.0	Tons	8
		3.7	%BOR	3%
Cyclone Rejects OD Basis		20.3	Tons	27
		10.8	%BOR	10%
Water		25.0%	(Estimated)	25
Organic Material OD Basis		52.4	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis		50.6	%BOR	35
Pulper Operating Time		26	Hours	40
Reactor Operating Time		22	Hours	40
Fibreclaim Operating Time		7.4	Hours	40
Electricity Used	Total	38000	KW Hrs. for Plant	41,250
	Rate	202.	KW Hrs/Ton	154
Effluent to MCD		543,000	Gallons	120,000
		250	GPM	50
Oil to Reheat Reactor	Total	630	Gallons	
	Rate	3.4	Gallons/Ton	
Water Used	Total	720,000	Gallon	
	Rate, Flow	310	GPM	
	Rate, per Ton	3840	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 7/22 THRU 7/28

			DESIGN
Refuse Received, weighed	211	Tons	
not weighed-estimated	15	Tons	
Total	226	Tons	267
Refuse Processed	214	Tons	267
Process Rate	6.9	Tons/hr.	6.7
Fiber Collected and ~~Sold~~	~~5~~ 4.5	Tons (AD)	53
Production Rate	.5	Tons/hr	1.3
Fiber Recovered OD Basis	2.1	%BOR*	20%
Magnetic Metal Recovered OD Basis	16.2	Tons	19
	7.6	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	6.3	Tons	8
	3.0	%BOR	3%
Cyclone Rejects OD Basis	22.6	Tons	27
	10.6	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	53.8	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	51.7	%BOR	35
Pulper Operating Time	31	Hours	40
Reactor Operating Time	27	Hours	40
Fibreclaim Operating Time	9	Hours	40
Electricity Used Total	37,800	KW Hrs. for Plant	41,250
Rate	176	KW Hrs/Ton	154
Effluent to MCD	542,740	Gallons	120,000
	290	GPM	50
Oil to Reheat Reactor Total	280	Gallons	
Rate	1.3	Gallons/Ton	
Water Used Total	716,000	Gallon	
Rate, Flow	380	GPM	
Rate, per Ton	3350	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 7/15/72 THRU 7/21/72

Refuse Received,	weighed	193	Tons	DESIGN
	not weighed-estimated	13	Tons	
	Total	206	Tons	267
Refuse Processed		203	Tons	267
Process Rate		7.3	Tons/hr.	6.7
Fiber Collected and Sold		9.3	Tons (AD)	53
Production Rate		0.6	Tons/hr	1.3
Fiber Recovered	OD Basis	4.5	%BOR*	20%
Magnetic Metal Recovered OD Basis		14.8	Tons	19
		7.3	%BOR	7%
Nonmagnetic Junker Rejects OD Basis		6.2	Tons	8
		3.1	%BOR	3%
Cyclone Rejects OD Basis		26.8	Tons	27
		13.2	%BOR	10%
Water		25.0	% (Estimated)	25
Organic Material OD Basis		50.4	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis		45.9	%BOR	35
Pulper Operating Time		28	Hours	40
Reactor Operating Time		25	Hours	40
Fibreclaim Operating Time		17	Hours	40
Electricity Used	Total-Since 7/8/72	78,000	KW Hrs.for Plant	41,250
	Rate	187	KW Hrs/Ton	154
Effluent to MCD -- Since 7/8/72		844,000	Gallons	120,000
		245	GPM	50
Oil to Reheat Reactor	Total	450	Gallons	
	Rate	2.2	Gallons/Ton	
Water Used	Total - Since 7/8/72	1,113,000	Gallon	
	Rate, Flow	330	GPM	
	Rate, per Ton	2700	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 7/8/72 THRU 7/14/72

					DESIGN
Refuse Received, weighed			202	Tons	
	not weighed-estimated		14	Tons	
	Total		216	Tons	267
Refuse Processed			212	Tons	267
Process Rate			7.1	Tons/hr.	6.7
Fiber Collected and Sold			8.4	Tons (AD)	53
Production Rate			.7	Tons/hr	1.3
Fiber Recovered	OD Basis		4.0	%BOR*	20%
Magnetic Metal Recovered OD Basis			18.2	Tons	19
			8.6	%BOR	7%
Nonmagnetic Junker Rejects OD Basis			7.5	Tons	8
			3.6	%BOR	3%
Cyclone Rejects OD Basis			22.5	Tons	27
			10.6	%BOR	10%
Water			25.0	% (Estimated)	25
Organic Material OD Basis			52.2	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis			48.2	%BOR	35
Pulper Operating Time			30	Hours	40
Reactor Operating Time			28	Hours	40
Fibreclaim Operating Time			12	Hours	40
Electricity Used	Total	Failed to Take Readings		KW Hrs: for Plant	41,250
	Rate			KW Hrs/Ton	154
Effluent to MCD				Gallons	120,000
				GPM	50
Oil to Reheat Reactor	Total		330	Gallons	
	Rate		1.6	Gallons/Ton	
Water Used	Total	Failed To Take Readings		Gallon	
	Rate, Flow			GPM	
	Rate, per Ton			Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

WEEK OF 7/1 THRU 7/7

			DESIGN
Refuse Received, weighed	157	Tons	
not weighed-estimated	16	Tons	
Total	173	Tons	267
Refuse Processed	168	Tons	267
Process Rate	7.3	Tons/hr.	6.7
Fiber Collected and Sold	2.3	Tons (AD)	53
Production Rate	.5	Tons/hr	1.3
Fiber Recovered OD Basis	1.4	%BOR*	20%
Magnetic Metal Recovered OD Basis	13.4	Tons	19
	7.9	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	5.8	Tons	8
	3.5	%BOR	3%
Cyclone Rejects OD Basis	17.8	Tons	27
	10.6	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	53.0	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	51.6	%BOR	35
Pulper Operating Time	23	Hours	40
Reactor Operating Time	23	Hours	40
Fibreclaim Operating Time	5	Hours	40
Electricity Used Total	27000	KW Hrs.for Plant	41,250
Rate	160	KW Hrs/Ton	154
Effluent to MCD	364,750	Gallons	120,000
	265	GPM	50
Oil to Reheat Reactor Total	0	Gallons	
Rate	0	Gallons/Ton	
Water Used Total	355,000 ~~[illegible]~~	Gallon	
Rate, Flow	255 ~~[illegible]~~	GPM	
Rate, per Ton	2100 ~~[illegible]~~	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 6/26 THRU 6/30**

				DESIGN
Refuse Received, weighed		185	Tons	
	not weighed-estimated	11	Tons	
	Total	196	Tons	267
Refuse Processed		206	Tons	267
Process Rate		6.6	Tons/hr.	6.7
Fiber Collected and Sold		0	Tons (AD)	53
Production Rate		0	Tons/hr	1.3
Fiber Recovered	OD Basis	0	%BOR*	20%
Magnetic Metal Recovered OD Basis		15.7	Tons	19
		7.6	%BOR	7%
Nonmagnetic Junker Rejects OD Basis		8.5	Tons	8
		4.1	%BOR	3%
Cyclone Rejects OD Basis		22.3	Tons	27
		10.8	%BOR	10%
Water		25.0	% (Estimated)	25
Organic Material OD Basis		52.5	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis		52.5	%BOR	35
Pulper Operating Time		31	Hours	40
Reactor Operating Time		23	Hours	40
Fibreclaim Operating Time		0	Hours	40
Electricity Used	Total	28,400	KW Hrs.for Plant	41,250
	Rate	138	KW Hrs/Ton	154
Effluent to MCD		259,340	Gallons	120,000
		140	GPM	50
Oil to Reheat Reactor	Total	See next week	Gallons	
	Rate	--	Gallons/Ton	
Water Used	Total	430,000	Gallon	
	Rate, Flow	230	GPM	
	Rate, per Ton	2100	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d ** = Starting 7/1/72 all weeks will begin on Saturday

WEEK OF [illegible] THRU [illegible]

			DESIGN
Refuse Received, weighed	218	Tons	
not weighed-estimated	12	Tons	
Total	230	Tons	267
Refuse Processed	226	Tons	267
Process Rate	6.3	Tons/hr.	6.7
Fiber Collected and Sold	0	Tons (AD)	53
Production Rate	0	Tons/hr	1.3
Fiber Recovered OD Basis	0	%BOR*	20%
Magnetic Metal Recovered OD Basis	14.1	Tons	19
	6.2	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	7.9	Tons	8
	3.5	%BOR	3%
Cyclone Rejects OD Basis	20.8	Tons	27
	9.2	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	56.1	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	56.1	%BOR	35
Pulper Operating Time	36.0	Hours	40
Reactor Operating Time	32.9	Hours	40
Fibreclaim Operating Time	Only for customers	Hours	40
Electricity Used Total	36,000	KW Hrs. for Plant	41,250
Rate	159	KW Hrs/Ton	154
Effluent to MCD	267,910	Gallons	120,000
	125	GPM	50
Oil to Reheat Reactor Total	300	Gallons	
Rate	1.3	Gallons/Ton	
Water Used - Total	470,000	Gallon	
Rate, Flow	215	GPM	
Rate, per Ton	2060	Gallon/Ton	

*BOR = Based on Refuse

E. T. Blakley/d

Reproduced from best available copy.

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 6/12 THRU 6/18

			DESIGN
Refuse Received, weighed	234	Tons	
~~Refuse received~~, not weighed - estimated	13	Tons	
~~Refuse Received~~, Total	247	Tons	267
Refuse Processed	241	Tons	267
Process Rate	6.8	Tons/hr.	6.7
Fiber Collected and Sold	0	Tons (AD)	53
Production Rate	0	Tons/hr	1.3
Fiber Recovered OD Basis	0	%BOR*	20%
Magnetic Metal Recovered OD Basis	14.7	Tons	19
	6.1	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	9.6	Tons	8
	4.0	%BOR	3%
Cyclone Rejects OD Basis	23.1	Tons	27
	9.6	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	55.3	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	55.3	%BOR	35
Pulper Operating Time	35.9	Hours	40
Reactor Operating Time	35.4	Hours	40
Fibreclaim Operating Time	0	Hours	40
Electricity Used	37800	KW Hrs.for Plant	41,250
[illegible]	156	KW Hrs/TON	154
Effluent to MCD	NOT READ	Gallons	120,000
	—	GPM	50
Oil to Reheat Reactor	270	Gallons	
	1.1	Gallons/Ton	—
Water Usage	450,000	Gallons	
	210	GPM	
	1860	Gallons/TON	

*BOR = Based on Refuse

E. T. Blakley/d

ETB/lp - 6/22/72

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 6/5 THRU 6/11

Refuse received, weighed	246	TONS	
Refuse received, not weighed (standard gar)	13	TONS	**DESIGN**
Refuse Received	259	Tons	267
Refuse Processed	266	Tons	267
Process Rate	7.5	TONS/HOUR	6.7
Fiber Collected and Sold	2.0	Tons (AD)	53
Production Rate	0.4	TONS/HOUR	1.3
Fiber Recovered OD Basis	0.8	%BOR*	20%
Magnetic Metal Recovered OD Basis	16.1	Tons	19
	6.1	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	6.7	Tons	8
	2.5	%BOR	3%
Cyclone Rejects OD Basis	23.8	Tons	27
	9.0	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	57.4	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	56.6	%BOR	35
Pulper Operating Time	36	Hours	40
Reactor Operating Time	36	Hours	40
Fibreclaim Operating Time	5	Hours	40
Electricity Used	37,800	KW Hrs. for Plant	41,250
" "	142	KW HRS/TON	154
Effluent to MCD	NOT WORKING	Gallons	120,000
	—	GPM	50
Oil to Reheat Reactor	250	Gallons	
" " " "	0.9	Gallons/TON	
Water used	454,000	Gallons	
" "	210	GPM	
" "	1710	Gallons/TON	

*BOR = Based on Refuse

E. T. Blakley/d

ETB/rp-June 14, 1972

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 5/29 THRU 6/4

Refuse Recd Weighed	215	Ton	
Refuse Recd not weighed (estimated)	11	Ton	**DESIGN**
Refuse Received	226	Tons	267
Refuse Processed	210	Tons	267
Process Rate	7.0	Tons / hour	6.7
Fiber Collected and Sold	2.4	Tons (AD)	53
Production Rate	0.2	Ton/hour	1.3
Fiber Recovered OD Basis	1.2	%BOR*	20%
Magnetic Metal Recovered OD Basis	14.0	Tons	19
	6.6	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	5.7	Tons	8
	2.7	%BOR	3%
Cyclone Rejects OD Basis	23.1	Tons	27
	11.0	%BOR	10%
ter	25.0	% (Estimated)	25
Organic Material OD Basis	54.7	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	53.5	%BOR	35
Pulper Operating Time	30	Hours	40
Reactor Operating Time	29	Hours	40
Fibreclaim Operating Time	11	Hours	40
Electricity Used	43,200	KW Hrs. for Plant	41,250
" "	205 **	Kw hrs/Ton	
Effluent to MCD	not working	Gallons	120,000
	—	GPM	50
Oil to Reheat Reactor	340	Gallons	
" " " "	1.6	Gallon/ton	
Water used	520,000	Gallon	
" "	290	GPM	
" "	2500	Gallons/Ton	

*BOR = Based on Refuse

** - Extra day of reheating reactor.

E. T. Blakley/d

RECEIVED
JUN 9 1972
BLACK CLAWSON
SHARTLE DIV.
ENGR.

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 5/22 THRU 5/28/72

Refuse received, weighed	243	Tons	DESIGN
Refuse received, not weighed (estimated)	20		
Refuse Received, total	263	Tons	267
Refuse Processed	260	Tons	267
Process Rate	7.2	Tons/hour	
Fiber Collected and Sold	7.0	Tons (AD)	53
Production Rate	0.3	Tons/hour	
Fiber Recovered OD Basis	2.7	%BOR*	20%
Magnetic Metal Recovered OD Basis	17.2	Tons	19
	6.6	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	7.8	Tons	8
	3.0	%BOR	3%
Cyclone Rejects OD Basis	29.1	Tons	27
	11.2	%BOR	10%
Water	25	% (Estimated)	25
Organic Material OD Basis	54.2	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	51.5	%BOR	35
Pulper Operating Time	36	Hours	40
Reactor Operating Time	33	Hours	40
Fibreclaim Operating Time	27	Hours	40
Electricity Used	43,200	KW Hrs. for Plant	41,250
Electricity Used per ton	165	KW Hrs./ton	154
Effluent to MCD	Not working	Gallons	120,000
	---	GPM	50
Oil to Reheat Reactor	340	Gallons	
Oil to Reheat Reactor per ton	1.3	gallons/ton	
Water used	~~52,300~~ 52[illegible]	Gallons	
Water used	240	GPM	
Water used	2,000	Gallons/ton	

*BOR = Based on Refuse

E. T. Blakley/d
Typed 6/2/72-lp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 5/15 THRU 5/21/72

			DESIGN
Refuse received, weighed	231	Tons	
Refuse received, not weighed (estimated)	13		
Refuse Received	244	Tons	267
Refuse Processed	236	Tons	267
Process Rate	7.1	Tons/hr	6.3
Fiber Collected and Sold	6.5	Tons (AD)	53
Production Rate	0.3	Tons/hr	1.3
Fiber Recovered OD Basis	2.8	%BOR*	20%
Magnetic Metal Recovered OD Basis	16	Tons	19
	6.8	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	6.8	Tons	8
	2.9	%BOR	3%
Cyclone Rejects OD Basis	23	Tons	27
	9.6	%BOR	10%
Water	25	% (Estimated)	25
Organic Material OD Basis	55.7	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	52.9	%BOR	35
Pulper Operating Time	33.5	Hours	40
Reactor Operating Time	30	Hours	40
Fibreclaim Operating Time	22	Hours	40
Electricity Used	34,200	KW Hrs. for Plant	41,250
" " per ton	144	KW hrs/ton	154
Effluent to MCD	Not working	Gallons	120,000
	- -	GPM	50
Oil to Reheat Reactor	250	Gallons	
" " " "	1.1	Gal/ton	
Water used	467,000	Gallons	
" "	234	GPM	
" "	1,980	Gal/ton	

E. T. Blakley/d

*BOR = Based on Refuse

Typed 5/22/72

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 5/8 THRU 5/14/72

Refuse received, weighed	241	Tons	
Refuse received, not weighed (estimated)	11	TONS	**DESIGN**
Refuse Received	252	Tons	267
Refuse Processed	258	Tons	267
Process Rate	7.2	Tons/hr	6.25
Fiber Collected and Sold	7.0	Tons (AD)	53
Production Rate	.3	Tons (AD)/hr	1.3
Fiber Recovered OD Basis	2.7%	BOR*	20%
Magnetic Metal Recovered OD Basis	17.3	Tons	19
	6.7%	BOR	7%
Nonmagnetic Junker Rejects OD Basis	7.9	Tons	8
	3.1%	BOR	3%
Cyclone Rejects OD Basis	27.5	Tons	27
	10.6%	BOR	10%
Water	25	% (Estimated)	25
Organic Material OD Basis	54.6%	BOR	55
Organic Material Burned or Lost with Effluent OD Basis	51.9%	BOR	35
Pulper Operating Time	36.2	Hours	40
Reactor Operating Time	31.3	Hours	40
Fibreclaim Operating Time	22.1	Hours	40
Electricity Used	37,800	KW Hrs. for Plant	41,250
	146	KW Hrs./Ton	154
Effluent to MCD	Not working	Gallons	120,000
	---	GPM	50
Oil to Reheat Reactor	210	Gallons	
" " "	.8	G/T	
Fresh water used	550,000	Gallons	
" " "	255	GPM	
" " "	2,130	Gallons/Ton	

K. T. Blakley/d

Typed 5/17/72/rp

*BOR = Based on Refuse

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF May 1 THRU May 7, 1972

			DESIGN
Refuse received, weighed	224.8	Tons	
Refuse received, not weighed (est.)	15.0	Tons	
Refuse Received, total	239.8	Tons	267
Refuse Processed	213.9	Tons	267
Fiber Collected and Sold	6.6	Tons (AD)	53
Fiber Recovered OD Basis	3.1	%BOR*	20%
Magnetic Metal Recovered OD Basis	13.8	Tons	19
	6.5	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	6.2	Tons	8
	2.9	%BOR	3%
Cyclone Rejects OD Basis	21.7	Tons	27
	10.1	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	55.5	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	52.4	%BOR	35
Pulper Operating Time	36.5	Hours	40
Pulper Operating Rate	5.8	Tons per hr	
Reactor Operating Time	29.0	Hours	40
Fibreclaim Operating Time	23.8	Hours	40
Fibreclaim Operating Rate	0.3	TPH	
Electricity Used	37,800	KW Hrs.for Plant	41,250
Electricity Used KWH/Ton	176		154
Effluent to MCD		Gallons	120,000
		GPM	50
Oil to Reheat Reactor	240	Gallons	
	1.1	Gallons/ton	

*BOR = Based on Refuse

E. T. Blakley/d

5-10-72/rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 4/24 THRU 4/30/72

			DESIGN
Refuse received, weighed	293	Tons	
Refuse received, standard fee	17	Tons	
Refuse Received, total	310	Tons	267
Refuse Processed	279	Tons	267
Fiber Collected and Sold	10.0	Tons (AD)	53
Fiber Recovered OD Basis	3.6	%BOR*	20%
Magnetic Metal Recovered OD Basis	17.8	Tons	19
	6.4	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	8.7	Tons	8
	3.1	%BOR	3%
Cyclone Rejects OD Basis	29.3	Tons	27
	10.5	%BOR	10%
Water	20.0	% (Estimated)	25
Organic Material OD Basis	60.0	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	56.4	%BOR	35
Pulper Operating Time	49.5	Hours	40
Reactor Operating Time	39.4	Hours	40
Fibreclaim Operating Time	38.0	Hours	40
Electricity Used	52,000	KW Hrs.for Plant	41,250
Effluent to MCD	Meter not working	Gallons	120,000
	-	GPM	50
Oil to Reheat Reactor	280	Gallons	

*BOR = Based on Refuse

E. T. Blakley/d

~~Typed May 16, 1972/rp~~ (the date given to me - rp)

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF April 17 THRU April 23, 1972

			DESIGN
Refuse received, weighed	389	Tons	
Refuse received, not weighed (estimated)	16	Tons	
Refuse Received total	405	Tons	267
Refuse Processed	437	Tons	267
Fiber Collected and Sold	8.8	Tons (AD)	53
Fiber Recovered OD Basis	2.0	%BOR*	20%
Magnetic Metal Recovered OD Basis	25.9	Tons	19
	5.9	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	11.3	Tons	8
	2.6	%BOR	3%
Cyclone Rejects OD Basis	40.7	Tons	27
	9.3	%BOR	10%
Water	20	% (Estimated)	25
Organic Material OD Basis	62.2	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	60.2	%BOR	35
Pulper Operating Time	67	Hours	40
Reactor Operating Time	58	Hours	40
Fibreclaim Operating Time	20**	Hours	40
Electricity Used	64,800	KW Hrs. for Plant	41,250
Effluent to MCD	Metering not working	Gallons	120,000
		GPM	50
Oil to Reheat Reactor	260	Gallons	

*BOR = Based on Refuse

** Fibreclaim downtime due to (1) clean Hydrasieves, (2) reactor trials, (3) change 24P basket, (4) change thick stock pump impeller

E. T. Blakley/d
4/25/72-rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF April 10 THRU April 16, 1972

			DESIGN
Refuse received - weighed	335	Tons	
Refuse received - not weighed, estimated	13	Tons	
Refuse Received	348	Tons	267
Refuse Processed	312	Tons	267
Fiber Collected and Sold	6.6	Tons (AD)	53
Fiber Recovered OD Basis	2.1	%BOR*	20%
Magnetic Metal Recovered OD Basis	18.2	Tons	19
	5.8	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	10.2	Tons	8
	3.3	%BOR	3%
Cyclone Rejects OD Basis	30.3	Tons	27
	9.7	%BOR	10%
Water	20.0	% (Estimated)	25
Organic Material OD Basis	61.2	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	59.1	%BOR	35
Pulper Operating Time	65	Hours	40
Reactor Operating Time	44	Hours	40
Fibreclaim Operating Time	25	Hours	40
Electricity Used	57,600	KW Hrs. for Plant	41,250
Effluent to MCD	Meter not working	Gallons	120,000
Oil to Reheat Reactor	-	GPM	50
	184	Gallons	

*BOR = Based on Refuse PROCESSED

E. T. Blakley/d

April 18, 1972/rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF March 27 THRU April 2, 1972

			DESIGN
Refuse Received	166	Tons	267
Refuse Processed	165	Tons	267
Fiber Collected and Sold	7.7	Tons (AD)	53
Fiber Recovered OD Basis	4.7	%BOR*	20%
Magnetic Metal Recovered OD Basis	13.1	Tons	19
	7.9	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	5.6	Tons	8
	3.3	%BOR	3%
Cyclone Rejects OD Basis	20.0	Tons	27
	12.0	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	51.8	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	47.1	%BOR	35
Pulper Operating Time	33	Hours	40
Reactor Operating Time	23	Hours	40
Fibreclaim Operating Time	20	Hours	40
Electricity Used	34,200	KW Hrs. for Plant	41,250
Effluent to MCD	420,000	Gallons	120,000
	210	GPM	50
Oil to Reheat Reactor	460	Gallons	

*BOR = Based on Refuse

E. T. Blakley/d

April 4, 1972
rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 3/20/72 THRU 3/26/72

			DESIGN
Refuse Received **	211	Tons	267
Refuse Processed	211	Tons	267
Fiber Collected and Sold	10.7	Tons (AD)	53
Fiber Recovered OD Basis	5.0	%BOR*	20%
Magnetic Metal Recovered OD Basis	17.2	Tons	19
	8.1	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	8.4	Tons	8
	3.9	%BOR	3%
Cyclone Rejects OD Basis	27.1	Tons	27
	12.8	%BOR	10%
Water	25.0	% (Estimated)	25
Organic Material OD Basis	49.9	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	44.9	%BOR	35
Pulper Operating Time	40	Hours	40
Reactor Operating Time	31	Hours	40
Fibreclaim Operating Time	20	Hours	40
Electricity Used	37,800	KW Hrs.for Plant	41,250
Effluent to MCD	653,000	Gallons	120,000
	230	GPM	50
Oil to Reheat Reactor	410	Gallons	

*BOR = Based on Refuse

** = includes 36.1 tons from Industrial Waste Disposal on a trial basis.

E. T. Blakley/d/rp

March 27, 1972

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 3/13/72 THRU 3/19/72

			DESIGN
Refuse Received	176	Tons	267
Refuse Processed	170	Tons	267
Fiber Collected and Sold	8.3	Tons (AD)	53
Fiber Recovered OD Basis	5.0	%BOR*	20%
Magnetic Metal Recovered OD Basis	12.2	Tons	19
	7.2	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	5.6	Tons	8
	3.3	%BOR	3%
Cyclone Rejects OD Basis	25.0	Tons	27
	14.7	%BOR	10%
Water	25	% (Estimated)	25
Organic Material OD Basis	49.8	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	44.8	%BOR	35
Pulper Operating Time	35	Hours	40
Reactor Operating Time	27	Hours	40
Fibreclaim Operating Time	17	Hours	40
Electricity Used	43,000	KW Hrs.for Plant	41,250
Effluent to MCD	300,000	Gallons	120,000
Oil to Reheat Reactor	145 430	GPM Gallons	50

*BOR = Based on Refuse

E. T. Blakley/d /rp

March 21, 1972

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 3/6/72 THRU 3/12/72

			DESIGN
Refuse Received	150	Tons	267
Refuse Processed	151	Tons	267
Fiber Collected and Sold	9.8	Tons (AD)	53
Fiber Recovered OD Basis	6.5	%BOR*	20%
Magnetic Metal Recovered OD Basis	12.1	Tons	19
	8.0	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	3.8	Tons	8
	2.5	%BOR	3%
Cyclone Rejects OD Basis	21.1	Tons	27
	14.0	%BOR	10%
Water	25	% (Estimated)	25
Organic Material OD Basis	50.5	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	44.0	%BOR	35
Pulper Operating Time	35.6	Hours	40
Reactor Operating Time	29.6	Hours	40
Fibreclaim Operating Time	16.6	Hours**	40
Electricity Used	25,200	KW Hrs. for Plant	41,250
Effluent to MCD	539,190	Gallons	120,000
	250	GPM	50
Oil to Reheat Reactor	160	Gallons	

*BOR = Based on Refuse

** = Time that slurry is going to Fibreclaim versus surge chest. Actual equipment operating time is about double this figure.

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 2/28/72 THRU 3/5/72

			DESIGN
Refuse Received	168	Tons	267
Refuse Processed	162	Tons	267
Fiber Collected and Sold	2.8	Tons (AD)	53
Fiber Recovered OD Basis	1.7	%BOR*	20%
Magnetic Metal Recovered OD Basis	13.4	Tons	19
	8.3	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	5.2	Tons	8
	3.2	%BOR	3%
Cyclone Rejects OD Basis	19.1	Tons	27
	11.8	%BOR	10%
ater	25	% (Estimated)	25
Organic Material OD Basis	51.7	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	50.0	%BOR	35
Pulper Operating Time	36.6**	Hours	40
Reactor Operating Time	36.7**	Hours	40
Fibreclaim Operating Time	7.0	Hours	40
Electricity Used	59,400	KW Hrs. for Plant	41,250
Effluent to MCD	534,520	Gallons	120,000
	244	GPM	50
Oil to Reheat Reactor	220	Gallons	

E. T. Blakley/d

*BOR = Based on Refuse

** Extra hours for running organic rejects from previous week back through system included in this figure.

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 2/21/72 THRU 2/27/72

			DESIGN
Refuse Received	156.4	Tons	267
Refuse Processed	186.7	Tons	267
Fiber Collected and Sold	5.0	Tons (AD)	53
Fiber Recovered OD Basis	2.6	%BOR*	20
Magnetic Metal Recovered OD Basis	8.5	Tons	19
	4.5	%BOR	7
Nonmagnetic Junker Rejects OD Basis	6.6	Tons	8
	3.5	%BOR	3
Cyclone Rejects OD Basis	17.5	Tons	27
	9.3	%BOR	10
Water	25	% (Estimated)	25
Organic Material OD Basis	57.7	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	55.1**	%BOR	35
Pulper Operating Time	31	Hours	40
Reactor Operating Time	10	Hours	40
Fibreclaim Operating Time	8	Hours	40
Electricity Used	28,700	KW Hrs.for Plant	41,250
Effluent to MCD	500,000	Gallons	120,000
	275	GPM	50
Oil to Reheat Reactor		Gallons	

*BOR = Based on Refuse

** = Much stockpiled because reactor was down

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 2/14/72 THRU 2/20/72

			DESIGN
Refuse Received	171.7	Tons	267
Refuse Processed	138.7	Tons	267
Fiber Collected and Sold	9.0	Tons (AD)	53
Fiber Recovered OD Basis	6.4	%BOR*	20%
Magnetic Metal Recovered OD Basis	11.5	Tons	19
	8[illegible]	%BOR	7%
Nonmagnetic Junker Rejects OD Basis	4.0	Tons	8
	2.8	%BOR	3%
Cyclone Rejects OD Basis	17.4	Tons	27
	12.5	%BOR	10%
Water	25	% (Estimated)	25
Organic Material OD Basis	51.5	%BOR	55
Organic Material Burned or Lost with Effluent OD Basis	45.1**	%BOR	35
Pulper Operating Time	30	Hours	40
Reactor Operating Time	12	Hours	40
Fibreclaim Operating Time	8	Hours	40
Electricity Used	48,500	KW Hrs. for Plant	41,250
Effluent to MCD	500,000	Gallons	120,000
	275	GPM	50
Oil to Reheat Reactor		Gallons	

*BOR = Based on Refuse

** = Stockpiled because Reactor was down

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 2/7 THRU 2/13

Refuse Received	138	Tons
Refuse Processed	141	Tons
Fiber Collected and Sold	3.3	Tons (AD)
Fiber Recovered OD Basis	2.3%	BOR*
Magnetic Metal Recovered OD Basis	10.3 7.3%	Tons BOR
Nonmagnetic Junker Rejects OD Basis	5.0 3.6%	Tons BOR
Cyclone Rejects OD Basis	16.6 11.8%	Tons BOR
Water	25.0%	(Estimated)
Organic Material OD Basis	52.3%	BOR
Organic Material Burned or Lost with Effluent OD Basis	50.0%	BOR
Pulper Operating Time	25.2	Hours
Reactor Operating Time	24.0	Hours
Fibreclaim Operating Time	4.1	Hours
Electricity Used	30,600	KW Hours for Plant
Effluent to Lagoon	306,200	Gallons
Oil used in Reactor	1,440	Gallons

*BOR = Based on Refuse

E. T. Blakley/d

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 1/31/72 THRU 2/6/72

Refuse received total	164	Tons
Refuse processed	151	Tons
Fiber collected and sold	2.1	Tons (AD)
Fiber recovered AD basis	1.3%	BOR*
Magnetic metal recovered OD basis	11.6	Tons
	7.7%	BOR
Nonmagnetic junker rejects OD basis	4.7	Tons
	3.1%	BOR
Cyclone rejects OD basis	14.1	Tons
	9.3%	BOR
Water	25%	(estimated)
Organic material OD Basis	54.9%	BOR
Organic material burned or lost with effluent OD basis	53.6%	BOR
Pulper operating time	26	Hours
Reactor operating time	25	Hours
Fibreclaim Operating time	4	Hours
Electricity used	34,200	KW hours for plant

*BOR = Based on Refuse

E. T. Blakley

February 9, 1972

dp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 1/24 thru 1/30/72

Refuse received total	157.9	Tons
Refuse processed	159.0	Tons
Fiber collected and sold	2.6	Tons (AD)
Fiber recovered AD basis	1.7%	BOR*
Magnetic metal recovered OD basis	11.9	Tons
	7.2%	BOR
Nonmagnetic junker rejects OD basis	6.1	Tons
	3.8%	BOR
Cyclone rejects OD basis	19.0	Tons **
	12.0%	BOR
Water	25.0%	(estimated)
Organic material OD basis	52.0%	BOR
Organic material burned or lost with effluent OD basis	50.3%	BOR
Pulper operating time	34.9	Hours
Reactor operating time	25.7	Hours
Fibreclaim operating time	2.9	Hours
Electricity used	37,700	KW hours for plant

* BOR = Based on Refuse

** = 10.6 tons shipped to Owens-Illinois, Toledo, Ohio

E. T. Blakley

February 3, 1972
rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 1/24 THRU 1/30

Refuse Received total		157.9	Tons
Refuse Processed		159.0	Tons
Fiber Collected and Sold		2.6 ~~[illegible]~~	Tons (AD)
Fiber Recovered	AD ~~OD~~ Basis	1.7%	BOR*
Magnetic Metal Recovered	OD Basis	11.9 7.2%	Ton BOR
Nonmagnetic Junker Rejects	OD Basis	6.1 3.8%	Ton BOR
Cyclone Rejects	OD Basis	19.0 12.0%	Ton ** BOR
Water		25.0%	(Estimated)
Organic Material	OD Basis	52.0%	BOR
Organic Material Burned or Lost with Effluent	OD Basis	50.3%	BOR
Pulper Operating Time		34.9	Hours
Reactor Operating Time		35.7	Hours
Fibreclaim Operating Time		2.9	Hours
Electricity Used		37,700	KW Hours for Plant
			~~KW Hours for Lagoon~~

*BOR = Based on Refuse

** = 10.6 Ton shipped To Owens Illinois Toledo

E. T. Blakley/b

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 1/17 THRU 1/23

Refuse Received WEIGHED	161.3	Tons
TOTAL	177.0	Tons
Refuse Processed	156.5	Tons
Fiber Collected and Sold	0	Tons (AD)
Fiber Recovered OD Basis	0 %	BOR*
	12.9	Tons
Magnetic Metal Recovered OD Basis	7.8 %	BOR
	6.5	Tons
Nonmagnetic Junker Rejects OD Basis	3.9 %	BOR
	16.5	Tons
Cyclone Rejects OD Basis	9.9 %	BOR
Water	25 %	(Estimated)
Organic Material OD Basis	46.6 %	BOR
Organic Material Burned or Lost with Effluent OD Basis	46.6 %	BOR
Pulper Operating Time	38.5	Hours
Reactor Operating Time	22.4	Hours
Fibreclaim Operating Time	2.3**	Hours
Electricity Used		KW Hours for Plant
		KW Hours for Lagoon

*BOR = Based on Refuse

** Reworked pulper 1/22/72

E. T. Blakley/b

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 1/10 THRU 1/16

Refuse Received Weighed		161.6	Tons
" " Total		162.4	
Refuse Processed		170.4	Tons
Fiber Collected and Sold		4.4	Tons (AD)
Fiber Recovered	OD Basis	1 %	BOR*
Magnetic Metal Recovered	OD Basis	11.4 8.0 %	Tons BOR
Nonmagnetic Junker Rejects	OD Basis	5.2 3.1 %	BOR
Cyclone Rejects	OD Basis	21.2 12.4 %	BOR
Water		25 %	(Estimated)
Organic Material	OD Basis	48.5 %	BOR
Organic Material Burned or Lost with Effluent	OD Basis	47.5 %	BOR
Pulper Operating Time		34.2	Hours
Reactor Operating Time		30.7	Hours
Fibreclaim Operating Time		6.4	Hours
Electricity Used		Not Read	KW Hours for Plant
			~~KW Hours for Lagoon~~

*BOR = Based on Refuse

E. T. Blakley/b

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 1/3 THRU 1/9

Refuse Received weighed / Total 173.4 / 175.6 Tons

Refuse Processed 170.7 Tons

Fiber Collected and Sold 1.48 Tons (AD)

Fiber Recovered AD ~~OD~~ Basis 1 % BOR*

Magnetic Metal Recovered OD Basis 12.5 TONS 7.3 % BOR

Nonmagnetic Junker Rejects OD Basis 5.0 TONS 3.0 % BOR

Cyclone Rejects OD Basis 20.5 TONS 12.2 % BOR

Water 25 % (Estimated)

Organic Material OD Basis 47.5 % BOR

Organic Material Burned or Lost with Effluent OD Basis 46.5 % BOR

Pulper Operating Time 32.1 Hours

Reactor Operating Time 34.1 Hours

Fibreclaim Operating Time 5.4 Hours

Electricity Used NOT READ KW Hours for Plant

~~KW Hours for Lagoon~~

*BOR = Based on Refuse

E. T. Blakley/b

Franklin Plant Operating Report for Month of December, 1971

1. OPERATING DATA

		Actual	Design
Tons received, weighed		731	1,160
Tons received, not weighed		18	
Total tons received		749	1,160
Fiber recovered, tons A.D.		36.8	223
Ferrous metal recovered, tons net		61	67
Tons to landfill O.D.		110.3	110
Water to M C D		-	-
Days operated		24	23
Hours operated:			
	Hydrapulper	111	184
	Reactor	108	184
	Fibreclaim	48	184
Rate (based on processed refuse):			
	Hydrapulper	6.5 TPH	6.25 TPH
	Reactor		131 #/Min.
	Fibreclaim		1.25 TPH

2. SAFETY

a) No accidents or near accidents were reported.

b) I feel the following every-day operating practices are unsafe:

1. Raising bucket on Bobcat too high and material falls into cab.
2. Cleaning Gyro-Flote while running.

c) The following equipment needs guards:

1. Washer drum
2. Gyro-Flote weight wheels

d) No recorded past planned action or results.

e) Plans for January are:

1. Purchase enclosure for Bobcat - $165
2. Install guards on washer drum and Gyro-Flote.
3. Try to find cleaner to clean slippery floors around splashing or leaking equipment.

3. HOUSEKEEPING

a) The present cleanliness of the plant may be satisfactory for an ordinary plant, but this plant is supposed to be a showplace and sales tool and is therefore unsatisfactory.

b) In the past few months several of the mess-causing situations have been alleviated:

1. Pulper hood
2. Hydrasieve covers.
3. Sliding door to replace broken conventional door.
4. Remove tire storage from plant to landfill.

HOUSEKEEPING continued

c) Plans for January are:

1. Remove sand bags from reactor room and add more shelves for spare part storage.

2. Splash guards for Hydrasieves.

3. Fix Hydradensers so they don't blow.

4. Add cover to conveyor 111B (Hydradenser to Rietz Press) so if Hydradensers blow then Rietz stays clean.

5. Make workers take pride in the appearance of plant.

4. QUALITY

a) Not many tests were run on fiber this month except for % grease before and after rewash.

b) Logan-Long were able to run rewashed pulp (pulp passed back through system using all fresh water) without any of the previous problems encountered. The success of these trials indicate the need for a clarifier.

c) Aside from the Bauer Cleaners and the Rietz Press, all other pieces of equipment have given us problems on capacity. The following changes have helped or hindered us as indicated.

1) Larger hole in Selectifier Screen - showed Hydrasieve to be under capacity.

2) Smaller hole in V.R. V.R. becomes difficult to operate and under capacity.

d) Future plans include the following:

1. Add showers to Hydrasieves.

2. Add clarifier

3. Speed up V.R.

5. OPERATIONS

a) The production rate of the pulping portion of the system is in line with design, however, the reactor rate is down due to thickening and feeding limitations. Fibreclaim's rate is far from design due to several pieces of equipment in the system.

Dorr-Oliver has ordered a BC ACO feeder to replace the currently installed feeder. Shipment scheduled for February 14.

b) The maintenance problems encountered in the past month are:

1. Dismantling of Hydradensers for repair. One screw had the flight length increased 1/2 flight, and the basket perforations were changed from .079 to .094. Preliminary evaluation indicates that these changes will correct the problem. If confirmed, the other two barrels will be changed in late January or early February.

2. Being able to keep hammers on pulper rotor.

   A change in design, to provide positive locking of the hammer hold-down nuts is being evaluated. Results are encouraging, but we will not know if the problem is solved until the end of January.

3. Maintenance costs are high due to 1 and 2 above plus two maintenance men and low plant income.

c) Power

Total power consumption for the plant for the month of December was 168,000 KW hours. This is 233 KWH/ton, approximately as planned.

d) Labor

Overtime

Most of the overtime charged in December was due to:

OPERATIONS continued

1. Late starts in mornings; first garbage comes in from 8:00 to 10:00.
2. Extra hours operation due to reactor on Fibreclaim low production rates.
3. Saturday operation.
4. Rewash trials
5. Extra housekeeping

e) Unusual costs aside from overtime this month were attributed to:

1. Repair and equipment to repair Hydradensers.
2. Tackle for pulper due to hammers coming off.
3. Fuel oil because of undercapacity of Hydradensers.
4. Extra power because of extra operating hours.
5. Fast tire wear on Bobcat and fork truck.

6. SUMMARY

1) The performance of Hydrasposal was satisfactory this month except for the repeated loss of hammers and the reduced capacity of the Hydradensers. It was discovered that the Hydradensers perform much better if as much fresh water as possible is added to the system.

2) It was determined that the bed level in the reactor was raising at a rapid rate. A hopper is being constructed to be used in the removal of bed material.

3) Fibreclaim needs much thought and work to bring its performance up to design. A problem in doing the work necessary is the overtime involved in the additional hours necessary for operation and finding a market for what we do produce even though the yield may be low.

E. T. Blakley
rp
1/19/72

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 12/27 THRU 12/31/71

Refuse received weighed	161	Tons
Refuse received weighed & misc	172	Tons
Refuse processed	172	Tons
Fiber collected and sold	2.1	Tons (AD)
Fiber recovered AD basis	1.2%	BOR*
Magnetic metal recovered OD basis	11.6	Tons
	6.8%	BOR
Nonmagnetic junker rejects OD basis	4.1	Tons
	2.4%	BOR
Cyclone rejects OD basis	20.9	Tons
	12.1%	BOR
Water	25.0%	(estimated)
Organic material OD basis	53.7%	BOR
Organic material burned or lost with effluent OD basis	52.5%	BOR
Pulper operating time	30	Hours
Reactor Operating time	31	Hours
Fibreclaim operating time	3	Hours
Electricity used	149,000	KW hours for plant since Dec. 6.

* BOR = Based on Refuse

E. T. Blakley

January 12, 1972

rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 12/20 THRU 12/26/71

Refuse received weighed	125	Tons
Refuse received weighed & misc	137	Tons
Refuse processed	142	Tons
Fiber collected and sold	5.3	Tons (AD)
Fiber recovered AD basis	3.7%	BOR*
Magnetic metal recovered OD basis	10.2 7.3%	Tons BOR
Nonmagnetic junker rejects OD basis	4.1 2.9%	Tons BOR
Cyclone rejects OD basis	15.8 11.2%	Tons BOR
Water	25.0%	(estimated)
Organic material OD basis	53.6%	BOR
Organic material burned or lost with effluent OD basis	49.9%	BOR
Pulper operating time	24	Hours
Reactor operating time	26	Hours
Fibreclaim operating time	12	Hours
Electricity used	Not read	KW hours for plant

*BOR = Based on refuse

E. T. Blakley

January 12, 1972

rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 12/13 thru 12/19/71

Refuse received	weighed	182	Tons
Refuse received	misc & weighed	184	Tons
Refuse processed		185	Tons
Fiber collected and sold		12.8	Tons (AD)
Fiber recovered	AD basis	6.8%	BOR*
Magnetic metal recovered	OD basis	11.6 6.3%	Tons BOR
Nonmagnetic junker rejects	OD basis	5.8 3.1%	Tons BOR
Cyclone rejects	OD basis	18.7 10.1%	Tons BOR
Water		25.0%	(estimated)
Organic material	OD basis	55.6%	BOR
Organic material burned or lost with effluent	OD basis	48.8%	BOR
Pulper operating time		36	Hours
Reactor operating time		31	Hours
Fibreclaim operating time		22	Hours
Electricity used		Not read	KW hours for plant

*BOR = Based on refuse

E. T. Blakley

January 12, 1972

rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 12/6 THRU 12/12/71

Refuse received	181	Tons
Refuse processed	148	Tons
Fiber collected and sold	8.2	Tons (AD)
Fiber recovered OD basis	5.5%	BOR*
Magnetic metal recovered OD basis	10.5 7.4%	Tons BOR
Nonmagnetic junker rejects OD basis	4.5 3.2%	Tons BOR
Cyclone rejects OD basis	17.8 12.5%	Tons BOR
Water	25.0%	(estimated)
Organic material OD basis	51.9%	BOR
Organic material burned or lost with effluent OD basis	46.4%	BOR
Pulper operating time	31	Hours
Reactor operating time	27	Hours
Fibreclaim operating time	21	Hours
Electricity used	Not read	KW hours for plant

* BOR = Based on refuse

E. T. Blakley

January 12, 1972

rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 11/15 THRU 11/21/71

Refuse received	173	Tons
Refuse processed	167	Tons
Fiber collected and sold	10.3	Tons (AD)
Fiber recovered OD basis	5.6%	BOR*
Magnetic metal recovered OD basis	6.5%	BOR
Nonmagnetic junker rejects OD basis	3.5%	BOR
Cyclone rejects OD basis	12.8%	BOR
Water	25.0%	(estimated)
Organic material OD basis	52.2%	BOR
Organic material burned or lost with effluent OD basis	45.7%	BOR
Pulper operating time	36	Hours
Reactor operating time	31	Hours
Fibreclaim operating time	30	Hours
Electricity used	34,300	KW hours for plant

*BOR = Based on refuse

E. T. Blakley

December 8, 1971

rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 11/22 THRU 11/28/71

Refuse received	132	Tons
Refuse processed	132	Tons
Fiber collected and sold	4	Tons (AD)
Fiber recovered OD basis	3.0%	BOR*
Magnetic metal recovered OD basis	7.4%	BOR
Nonmagnetic junker rejects OD basis	3.0%	BOR
Cyclone rejects OD basis	11.7%	BOR
Water	25.0%	(estimated)
Organic material OD basis	52.9%	BOR
Organic material burned or lost with effluent OD basis	49.9%	BOR
Pulper operating time	28	Hours
Reactor operating time	27	Hours
Fibreclaim operating time	10	Hours
Electricity used	45,000	KW hours for plant

*BOR = Based on refuse

E. T. Blakley

December 8, 1971

rp

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 11/15 THRU 11/21/71

Refuse received	173	Tons
Refuse processed	167	Tons
Fiber collected and sold	10.3	Tons (AD)
Fiber recovered OD basis	5.6%	BOR*
Magnetic metal recovered OD basis	6.5%	BOR
Nonmagnetic junker rejects OD basis	3.5%	BOR
Cyclone rejects OD basis	12.8%	BOR
Water	25.0%	(estimated)
Organic material OD basis	52.2%	BOR
Organic material burned or lost with effluent OD basis	45.7%	BOR
Pulper operating time	36	Hours
Reactor operating time	31	Hours
Fibreclaim operating time	30	Hours
Electricity used	34,300	KW hours for plant

*BOR = Based on refuse

E. T. Blakley

December 8, 1971

rp

To Mr. C. C. Landegger/ from Paul G. Marsh Date December 6, 1971
BC/NYC

Copies To P. A. Alevra, Peter Seifert, W. Herbert

Subject Franklin Plant - Additional Yield Information: Item No. 3 - CCL 71-1258

File Ref. Franklin Plant
c.r. VR Classifiner

Data collected during the week of November 29 to December 3 indicate yields at Franklin in the range of 10 - 15% using the Laboratory VR Classifiner.

Tests are being made in the Middletown Laboratory to relate yield to the amount of paper fiber present in the refuse. The relationship between final yield and the amount of paper present in the refuse will be reported by Peter Seifert.

Paul G. Marsh

PGM/erb

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DEC 6 1971
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STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 11/8 THRU 11/14/71

Refuse received	170	Tons
Refuse processed	158	Tons
Fiber collected and sold	11.4	Tons (AD)
Fiber recovered OD basis	6.5 %	BOR*
Magnetic metal recovered OD basis	6.9 %	BOR
Nonmagnetic junker rejects OD basis	3.5 %	BOR
Cyclone rejects OD basis	11.4 %	BOR
Water	25.0 %	(estimated)
Organic material OD basis	53.2 %	BOR
Organic material burned or lost with effluent OD basis	46.7 %	BOR
Pulper operating time	28.2	Hours
Reactor operating time	29.2	Hours
Fibreclaim operating time	23.4	Hours
Electricity used	34,200	KW hours for plant

* BOR = Based on Refuse

E. T. Blakley/rp

November 18, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 11/1 THRU 11/ 7/71

Refuse received	219	Tons
Refuse processed	219	Tons
Fiber collected and sold	1	Tons (AD)
Fiber recovered OD basis	.4 %	BOR*
Magnetic metal recovered OD basis	7.1 %	BOR
Nonmagnetic junker rejects OD basis	3.7 %	BOR
Cyclone rejects OD basis	12.5 %	BOR
Water	25.0 %	(estimated)
Organic material OD basis	51.7 %	BOR
Organic material burned or lost with effluent OD basis	51.3 %	BOR
Pulper operating time	36.9	Hours
Reactor operating time	42.9	Hours
Fibreclaim operating time	5.0	Hours
Electricity used	46,800	KW hours for plant
		KW hours for lagoon

*BOR = Based on refuse

E. T. Blakley/rp

November 9, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 10/25 THRU 10/31/71

Refuse received	231	Tons
Refuse processed	237	Tons
Fiber collected and sold	0	Tons (AD)
Fiber recovered OD basis	0 %	BOR*
Magnetic metal recovered OD basis	7.9 %	BOR
Nonmagnetic junker rejects OD basis	1.6 %	BOR**
Cyclone rejects OD basis	10.8 %	BOR
Water	25.0 %	(estimated)
Organic material OD basis	54.7 %	BOR
Organic material burned or lost with effluent OD basis	54.7 %	BOR
Pulper operating time	36	Hours
Reactor operating time	36	Hours
Fibreclaim operating time	0	
Electricity used	41,400	KW hours for plant

---

*BOR = Based on refuse

** = This figure seems to be in error. Operator must have failed to weigh several hoppers.

E. T. Blakley/rp

November 4, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 10/18 THRU 10/23/71

Refuse received	217	Tons
Refuse processed	204	Tons
Fiber collected and sold	0	Tons (AD)
Fiber recovered OD basis	0 %	BOR*
Magnetic metal recovered OD basis	7.4 %	BOR
Nonmagnetic Junker rejects OD basis	2.9%	BOR
Cyclone rejects OD basis	11.4 %	BOR
Water	25.0 %	(estimated)
Organic material OD basis	53.3 %	BOR
Organic material burned or lost with effluent OD basis	53.3 %	BOR
Pulper operating time	30	Hours
Reactor operating time	37	Hours
Fibreclaim operating time	2	Hours
Electricity used	34,300	KW Hours for plant
	Cannot read	KW Hours for lagoon

* BOR = Based on refuse

E. T. Blakley/rp

October 25, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 10/11 THRU 10/17/71

Refuse received	218	Tons
Refuse processed	218	Tons
Fiber collected and sold	0	Tons (AD)
Fiber recovered OD basis	0 %	BOR*
Magnetic metal recovered OD basis	11.2%	BOR
Nonmagnetic Junker rejects OD basis	3.4%	BOR
Cyclone rejects OD basis	12.2%	BOR
Water	25.0%	(estimated)
Organic material OD basis	48.2%	BOR
Organic material burned or lost with effluent OD basis	48.2%	BOR
Pulper operating time	37.2	Hours
Reactor operating time	37.6	Hours
Fibreclaim operating time	0	Hours
Electricity used	186,000	KW hours for plant since 9/20/71
		KW hours for lagoon

*BOR = Based on refuse

E. T. Blakley/rp

October 25, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF 10/4 THRU 10/10/71.

Refuse received		222	Tons
Refuse processed		257	Tons
Fiber collected and sold		0	Tons (AD)
Fiber recovered	OD Basis	0%	BOR*
Magnetic metal recovered	OD Basis	6.0%**	BOR
Nonmagnetic Junker rejects	OD Basis	1.8%**	BOR
Cyclone rejects	OD Basis	5.8%**	BOR
Water		25.0%	(estimated)
Organic material	OD Basis	61.4%	BOR
Organic Material burned or lost with effluent	OD Basis	61.4%	BOR
Pulper Operating Time		47.6	Hours
Reactor Operating Time		60.8	Hours
Fibreclaim Operating Time		0	Hours
Electricity used		not read	KW hours for plant
		not read	KW hours for lagoon

*BOR = Based on refuse

** = Apparently all hoppers were not weighed due to new personnel and St. Regis sampling.

E. T. Blakley/rp
October 25, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF SEPTEMBER 27, 1971 THRU OCTOBER 3, 1971

Refuse Received	325 Tons
Refuse Processed	320 Tons
Fiber Collected for St. Regis Trials	11 Tons (AD)
Fiber Recovered OD Basis	3.6% BOR*
Magnetic Metal Recovered OD Basis	5.6% BOR
Nonmagnetic Junker Rejects OD Basis	3.9% BOR
Cyclone Rejects OD Basis	7.4% BOR
Water	25.0% (Estimated)
Organic Material OD Basis	58.1% BOR
Organic Material Burned or Lost with Effluent OD Basis	54.5% BOR
Pulper Operating Time	46.9 Hours
Reactor Operating Time	46.3 Hours
Fibreclaim Operating Time	40.8 Hours
Electricity Used	Not Read KW Hours for Plant Not Read KW Hours for Lagoon

*BOR = Based on Refuse

E.O. Blakley/b

E. T. Blakley/b
October 11, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF SEPTEMBER 20, 1971 THRU SEPTEMBER 26, 1971

Refuse Received		278	Tons
Refuse Processed		241	Tons
Fiber Collected for St. Regis Trials		15	Tons (AD)
Fiber Recovered	OD Basis	6.2%	BOR*
Magnetic Metal Recovered	OD Basis	6.5%	BOR
Nonmagnetic Junker Rejects	OD Basis	3.5%	BOR
Cyclone Rejects	OD Basis	7.1%	BOR
Water		25.0%	(Estimated)
Organic Material	OD Basis	57.9%	BOR
Organic Material Burned or Lost with Effluent	OD Basis	51.7%	BOR
Pulper Operating Time		36.4	Hours
Reactor Operating Time		37.6	Hours
Fibreclaim Operating Time		31.0	Hours
Electricity Used		Not Read Not Read	KW Hours for Plant KW Hours for Lagoon

*BOR = Based on Refuse

E.T. Blakley/b

E. T. Blakley/b
October 11, 1971

To W. Herbert **From** Paul G. Marsh **Date** September 21, 197

Copies To C. C. Landegger, P. A. Alevra, R. F. Vokes, E. T. Blakley, P. Seifert, W. P. Sibert

Subject Franklin Plant Operation: Week of September 13 to September 19, 1971

File Ref. Franklin Plant Operation/ Status (Progress Report)

c.r. Franklin Plant

The summary for the week of September 13 to September 19, 1971 is attached.

We planned to start sampling 40 tons of fiber for St. Regis Paper Company on September 15. However, we burned two motors in the Plant on September 15 and had to stockpile refuse. We started processing refuse again on September 16.

Due to a delay in delivery of the packaging materials for the recovered Fourth Forest Pulp, we stockpiled pulp. This will be packaged the week of September 20 to 24, under the supervision of Mr. D. E. Chupka. We expect our first shipment of Fourth Forest Pulp to be sent to St. Regis on the 23rd of September.

Paul G. Marsh/e

RECEIVED
SEP 22 1971
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PGM/erb

Enc.
Summary - Week of September 13 Thru September 19, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF SEPTEMBER 13 THRU SEPTEMBER 19, 1971

Refuse Received		248 Tons
Refuse Processed		244 Tons
Fiber Collected for St. Regis Sample		9 Tons (AD)
Fiber Recovered	OD Basis	3.4% BOR*
Magnetic Metal Recovered	OD Basis	6.0% BOR
Nonmagnetic Junker Rejects	OD Basis	2.4% BOR
Cyclone Rejects	OD Basis	9.5% BOR
Water		25.0% (Estimated)
Organic Material	OD Basis	57.1% BOR
Organic Material Burned or Lost with Effluent	OD Basis	53.7% BOR
Pulper Operating Time		32 Hours
Reactor Operating Time		32 Hours
Fibreclaim Operating Time		20 Hours
Electricity Used		36,000 KW Hours for Plant 7,400 KW Hours for Lagoon

*BOR = Based on Refuse

E. T. Blakley/e

E. T. Blakley/erb
September 22, 1971

To W. Herbert **From** Paul G. Marsh **Date** September 13,197

Copies To C. C. Landegger, P. A. Alevra, R. F. Vokes, E. T. Blakley, P. Seifert
W. P. Sibert

Subject Franklin Plant Operation: Week of September 6 to September 12, 1971

File Ref. Franklin Plant Operation/ Status (Progress Report)
c.r. Franklin Plant

The summary for the week of September 6 to September 12, 1971 is attached.

The latter part of the week we operated the Middletown Pilot Plant on Franklin fiber.

W. Herbert and I visited Logan-Long on Thursday, the 9th of September. We summarized the information contained on Table I (attached). This shows that the Fibreclaim pulp is between 4% and 5% solvent extractables ("grease"). It also shows that Nalco Chemical Petrolite and caustic soda have little effect on grease reduction. Enzyme treatment of Franklin pulp had no effect whatsoever. The most effective treatment for grease removal was, as previous data has shown, reverse cleaning. This reduced grease content from 5.2% down to 3.3%.

In our conversations with Don Brown, it appeared that he was not particularly convinced that grease was the problem in the plugging of his felts. He emphasized that his supplier had given him a different felt weave and that on previous occasions he has had problems when the weave of his felts was changed. Brown said that he would be ready to receive fiber again in about a week. However, we asked to postpone delivery since St. Regis will be taking all of our fiber during the month of September. Don said this was perfectly all right and that he would take fiber again on a test basis after we have taken our St. Regis samples.

PGM/crb

Enc. Summary - Week of September 6 to September 12, 1971
Table I - Tests on Fourth Forest Pulp and Logan-Long Fiber

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STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF SEPTEMBER 6 THRU SEPTEMBER 12, 1971

Refuse Received	256	Tons
Refuse Processed	293	Tons
Fiber Collected and Sold	0	Tons
Fiber Recovered OD Basis	0%	BOR*
Magnetic Metal Recovered OD Basis	6.5%	BOR
Nonmagnetic Junker Rejects OD Basis	2.8%	BOR
Cyclone Rejects OD Basis	9.0%	BOR
Water	25%	(Estimated)
Organic Material OD Basis	56.7%	BOR
Organic Material Burned or Lost with Effluent OD Basis	56.7%	BOR
Pulper Operating Time	32.8	Hours
Reactor Operating Time	37.7	Hours
Fibreclaim Operating Time	3.0	Hours
Electricity Used	37,800 8,300	KW Hours for Plant KW Hours for Lagoon

*BOR = Based on Refuse

E. T. Blakley/b

E. T. Blakley/b
September 13, 1971

September [illegible] 1[illegible]

TABLE I

TESTS ON FOURTH FOREST PULP AND LOGAN-LONG FIBER

DATE	SAMPLE	% EXTRACTABLES	CSF
2/1/71	Logan-Long Pulp	0.78	
7/24/71	Logan-Long Board Containing Franklin Pulp	1.44	
8/30/71	Franklin Fibreclaim Pulp from 8/30/71	4.04	555
9/2/71	Enzyme Industries		
	A - Blank	3.51	
	E - 1/100 Enzyme - 18 Hr.	3.56	
	F - 1/100 Enzyme + Lipase 18 Hr.	3.72	
9/2/71	Nalco Chemical Using 8/30/71 Pulp		
	(1) Blank	5.20	
	(2) 10#/Ton Applied at 20% Consistency (.5% B.O.P.)	4.81	
	(3) 10#/Ton Applied at 3% Consistency	4.90	
9/3/71	Flotation Cleaning @ .25% Consistency 60 psi - 8/30/71 Pulp		
	Bottom	3.28	
	Top	7.90	
9/4/71	8/30/71 Pulp		
	(1) 5% NaOH Applied at 20% Consistency	4.35	
	(2) 7% Petrolite 9-4238 Applied at 3% Consistency	4.76	

328

PGM

Paul G. Marsh/b

W. Herbert **From** Paul G. Marsh **Date** September 7, 1971

Copies To C. C. Landegger, P. A. Alevra, R. F. Vokes, E. T. Blakley, P. Seifert, W. P. Sibert

Subject Franklin Plant Operation: Week of August 30 Thru September 5, 1971

File Ref. Franklin Plant Operation/ Status (Progress Report)

c.r. Franklin, Ohio

Attached is the work summary for the week of August 30 through September 5, 1971.

This was far from a normal week:

1. Logan-Long asked us not to deliver any more pulp for at least a week to give them a chance to test the effect of felt life and board quality. (See attached memorandum.)

2. The Hydrapulper rotor drive shaft was bent on September 2 and had to be replaced. This caused us to shut down during the latter part of the week and over the weekend.

Paul G. Marsh

PGM/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of August 30 Thru September 5, 1971

Memo to the Files - 9/7/71 - Logan-Long

RECEIVED
SEP 8 1971
BLACK CLAWSON
SHARTLE DIV.
ENGR.

The Files **From** Paul G. Marsh **Date** September 7, 19

Copies To C. C. Landegger, P. A. Alevra, R. F. Vokes, W. Herbert, E. T. Blakley
P.Seifert, W. P. Sibert

Subject Possible Fourth Forest Pulp Handling Problems at Logan-Long **File Ref.** Logan-Long Co./Franklin

c.r. Fiber Recovery - Handling

During telephone conversation on August 30, 1971, I learned from Don Brown that he was having problems which he believes are attributable to our Fourth Forest Pulp.

He told me that his felts were filling with a waxy material and that his felt life had been cut from 30 days to 15 days. He is also experiencing a problem with the dry felt cracking which correlates with the addition of our pulp. In order to conclusively ascertain that our pulp is in fact the problem, Don told me that he would not take any more of our pulp for one or two weeks.

On August 31, Bill Herbert and I visited Logan-Long to discuss the problem further with Don Brown. Logan-Long's converters have 8" rolls. The short radius causes some checking with normal furnish. The normal furnish is

10%	Corrugated
14%	News
16%	Mixed Paper
60%	Wood

When our material was substituted for the straight blend of waste paper, more severe cracking problems were noted.

We asked about showers used on the paper machine felts. Don Brown told us that they had one fresh water shower and one white water shower on the paper machine felt.

Don Brown emphasized that he wants to work with us on solving the problem if there proves to be a problem.

Felt Filling

We stated that grease may be the cause of felt filling. Grease content of Logan-Long pulp was .8% (February 19, 1971). With our pulp added, one test showed 1.4% grease. Based on a 10% addition of Fourth Forest Pulp having a 4% - 5% grease content, the increase from .8% to 1.4% is explainable.

We propose that if grease is the problem, we would attack it at our plant. There is also the possibility of adding needle showers and/or chemical on the paper machine at Logan-Long.

Cracking of the Dry Felt

Grease removal may help cracking. However, a change in the waste paper blend formula is a more likely solution. For instance, our pulp might be used to replace news instead of the full waste paper mix.

PGM/erb

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF AUGUST 30 THRU SEPTEMBER 5, 1971

Refuse Received	222 Tons
Refuse Processed	175 Tons
Fiber Collected and Sold	.8 Tons (AD)
Fiber Recovered - OD Basis	.5% BOR*
Magnetic Metal Recovered - OD Basis	7.2% BOR
Nonmagnetic Junker Rejects OD Basis	3.7% BOR
Cyclone Rejects OD Basis	12.4% BOR
Water	25% (Estimated)
Organic Material OD Basis	51.7% BOR
Organic Material Burned or Lost with Effluent OD Basis	51.2% BOR
Pulper Operating Time	29 Hours
Reactor Operating Time	32 Hours
Fibreclaim Operating Time	7 Hours
Electricity Used	36,000 KW Hours for Plant 7,400 KW Hours for Lagoon

*BOR = Based on Refuse

Earl T. Blakley/b

Earl T. Blakley/b
September 7, 1971

To C. C. Landegger/NY **From** R. F. Vokes **Date** September 7, 1971

Copies To W. Herbert

Subject Franklin Plant Status **File Ref.** Solid Waste Processing/Franklin Plant

HYDRAPULPER DRIVE DAMAGE -- -- On Thursday, September 2, a piece of steel large enough to bend the Hydrapulper shaft caused a shut down. Repairs have been completed and operation resumed.

Corrections may include:

a) closer surveillance of trash
b) shaft diameter and metallurgy modification
c) other (?)

Frankly, I am surprised that we did not have this happen much sooner. Certainly, the experience will prove to be very valuable.

GREASE REMOVAL -- LOGAN-LONG -- -- All chemical methods have proved to be fruitless.

Reverse centrifugal cleaning removes approximately 50% -- perhaps enough for Logan-Long's requirements. Logan-Long meeting scheduled -- considering installation reverse cleaners Franklin plant.

We will keep you informed.

Copy PGH CW
9/7/71

RFVokes/fmw

RECEIVED
SEP 7 1971
BLACK CLAWSON
SHARTLE DIV.
ENGR.

Paul G. Marsh **From** Earl T. Blakley **Date** September 1, 19

Copies To C. C. Landegger, R. F. Vokes, W. Herbert, P. Seifert, W. P. Sibert

Subject Franklin Plant Operation:
Week of August 23 Thru
August 29, 1971

File Ref. Franklin Plant Operation/
Status (Progress Report)

c.r. Franklin, Ohio

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SEP 1 1971
BLACK CLAWSON
SHARTLE DIV.
ENGR.

Attached is the summary for the week of August 23 through August 29, 1971.

Two-shift operation was used August 23 through August 27, 1971 because an abnormal amount of refuse was brought in from Dayton by Southern Ohio Sanitation.

Earl T. Blakley /s

ETB/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of August 23 Thru August 29, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF AUGUST 23 THRU AUGUST 29, 1971

Refuse Received	291 Tons
Refuse Processed	291 Tons
Fiber Collected and Sold	17.6 Tons (AD)
Fiber Recovered OD Basis	5.6% BOR*
Magnetic Metal Recovered OD Basis	8.1% BOR
Nonmagnetic Junker Reject OD Basis	3.8% BOR
Cyclone Rejects OD Basis	13.4% BOR
Water	25% (Estimated)
Organic Material OD Basis	49.7% BOR
Organic Material Burned or Lost in Effluent OD Basis	44.1% BOR
Pulper Operating Hours	47
Reactor Operating Hours	47
Fibreclaim Operating Hours	29
Electricity Used	52,200 KW Hours for Plant 5,600 KW Hours for Lagoon

*BOR = Based on Refuse

E.T. Blakley/e

ETB/erb

W. Herbert **From** E. T. Blakley **Date** August 26, 1971

Copies To R. F. Vokes (2), P. G. Marsh, P. Seifert, W. P. Sibert

Subject Franklin Plant Operation:
Week of August 16 Thru
August 22, 1971

File Ref. Franklin Plant Operation/
Status (Progress Report)

c.r. Franklin Plant

Attached is the summary for the week of August 16 through August 22, 1971.

Due to large tonnage of refuse received (especially August 17, 1971 - 95 tons), two-shift operation was started on August 18, 1971 and continued through August 20, 1971.

E. T. Blakley/

ETB/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of August 16 thru August 22, 1971

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AUG 26 1971
BLACK CLAWSON
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STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF AUGUST 16 THRU AUGUST 22, 1971

Refuse Received		275	Tons
Refuse Processed		275	Tons
Fiber Collected and Sold		18.5	Tons (AD)
Fiber Recovered	OD Basis	6.2%	BOR*
Magnetic Metal Recovered	OD Basis	7.3%	BOR
Nonmagnetic Material	OD Basis	5.1%	BOR
Cyclone Rejects	OD Basis	11.8%	BOR
Water		25%	BOR
Organic Material	OD Basis	50.8%	BOR
Organic Material Burned or Lost in Effluent	OD Basis	44.6%	BOR
Pulper Operating Time		44	Hours
Reactor Operating Time		41	Hours
Fibreclaim Operating Time		33	Hours
Electricity Used		39,600 5,120 **	KW Hours for Plant KW Hours for Lagoon

*BOR = Based on Refuse

**Low because aerator was unknowingly shut down for three days due to power failure.

E.T. Blakley/e

ETB/erb
August 26, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF AUGUST 9 THRU AUGUST 15, 1971

Refuse Received	215 Tons
Refuse Processed	215 Tons
Fiber Collected and Weighed	16.4 Tons (AD)
Fiber Sold	16.4 Tons (AD)
Fiber Recovered OD Basis	6.9% BOR*
Magnetic Metal Recovered OD Basis	7.6% BOR
Nonmagnetic Metal OD Basis	4.1% BOR
Cyclone Rejects OD Basis	11.4% BOR
Water	25% BOR (estimated)
Organic Material	51.9% BOR
Organic Material Burned Or Lost with Effluent	45.0% BOR
Pulper Operating Time	31 Hours
Reactor Operating Time	28 Hours
Fibreclaim System Operating Time	27 Hours
Electricity Used	37,800 KW Hours for Plant 9,360 KW Hours for Lagoon

*BOR = Based on Refuse

C. O. Blakley/e

ETB/erb
August 19, 1971

[illegible] P. G. Marsh 8/18/71 fmw

OFFICE MEMORANDUM

NEW YORK, August 16, 1971
CCL-71-938

FROM: CARL C. LANDEGGER
TO: Mr. R. F. Vokes

SUBJECT:

Thank you for sending me a copy of Paul Marsh's weekly report dated August 5.

1. Regarding the hauling costs, why don't we simply put wheels on the bin which sits under the outgoing fiber conveyor?

Then every day either at the beginning or at the end of the day, the little truck that we use to push the garbage onto the conveyor could drag this over to Logan Long.

The entire trip back and forth shouldn't take more than half an hour. And this system would mean that the transportation costs would be virtually zero.

2. I notice a heading of "Cyclone Rejects 11.6%." Is this the glass pile?

3. This is a very good, clear and concise report, and I would appreciate your continuing to keep me on it on a regular basis.

CCLandegger
gs

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AUG 18 1971
CENTRAL MANAGER'S
OFFICE

W. Herbert **From** Paul G. Marsh **Date** August 16, 1971
Dictated 8/13/71

Copies To R. F. Vokes (2), E. T. Blakley, P. Seifert, W. P. Sibert

Subject Franklin Plant Operation:
Week of August 2 - August 7, 1971

File Ref. Franklin Plant Operation/
Status (Progress Report)

c.r. Franklin Plant

The summary for the week of August 2 to August 7 is attached.

On August 2, we held Open House for Black Clawson employees.

Due to shutting down to make adjustments, fiber recovery does not look exciting; however we are making significant progress.

During the week we removed an .062" (hole size) basket and installed an .079" in the 24P.

We also completed installation of a 1/4" perforated plate in the Gyro-Flote Screen. This plugged; however compared with the 1/8", which was replaced, operation improvement was marked.

Correction: Correct July 26 - August 1 Weekly Summary. Organic content was not the 48% reported but 51.7%.

Paul G. Marsh/lb

PGM/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of August 2 to August 7, 1971

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340

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF AUGUST 2 TO AUGUST 7, 1971

Refuse Received	205 Tons
Refuse Processed	231 Tons (48 T/D on a 5-day/week basis)
Fiber Collected and Weighed	10.6 Tons (AD)
Fiber Sold	10.6 Tons (AD)
Fiber Recovered OD Basis	4.2% BOR*
Magnetic Metal Recovered OD Basis	7.7% BOR
Nonmagnetic Metal OD Basis	3.9% BOR
Cyclone Rejects	11.4% BOR
Water	25% BOR (estimated)
Organic Material	51.0% BOR
Pulper Operating Time	35 Hours
Reactor Operating Time	39 Hours
Fibreclaim System Operating Time	33 Hours

*BOR = Based on Refuse

PGM/b

PGM/erb
August 16, 1971

W. Herbert **From** Paul G. Marsh **Date** August 16, 1971
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Paul G. Marsh/lw

PGM/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of August 2 to August 7, 1971

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*BOR = Based on Refuse

PGM/e

PGM/erb
August 16, 1971

LW. Herbert **From** Paul G. Marsh **Date** August 5, 1971

Copies To R. F. Vokes (2), E. T. Blakley, D. H. Kohlhepp

Subject Franklin Solid Waste Plant Progress:
Week of July 26 to August 1, 1971

File Ref. Franklin Plant Operation/
Status (Progress Report)

c.r. Franklin, Ohio Plant
c.r. Logan-Long Co./Franklin
c.r. Cohen Brothers Inc.
c.r. Huron Valley Sheet/Detroit

The production statistics for the Franklin Solid Waste Plant for the week of July 26 to August 1, 1971 are attached.

Hydrasposal System

We are working on several problems in the Hydrasposal area:

1. Wear on the Hydrapulper dump pump - fill in observation port, build up with weld and ceramic coat.
2. Insufficient capacity on the airlock feeder to the Fluid Bed Reactor - Kohlhepp proceeding with Dorr-Oliver to get a new feeder.
3. Insufficient capacity of the Hydradensers - tighten down discharge plugs, produce thicker feed stock feed to the Hydradensers (3-vane rotor, more thickening of rejects in the Fibreclaim System).
4. Bearing problems on submerged bearings (JU Pumps, agitators) - replace Graphitar bearings with Delrin plastic.

Fibreclaim System

We were able to run fairly consistently in the Fibreclaim System. Most of the mechanical bugs are out of the system. The main cause for shutdown has been problems with dilute rejects which have interfered with the operation of the Hydrasposal System.

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Fibreclaim System - continued

Some of the problems worked on in the Fibreclaim System are reported below:

1. Yield

   In the report of the week of July 19 - 24, 1971, I stated that the 24-hour rate of the Fibreclaim System was 13.5 tons per day. This has actually figured out to be 9.7 AD tons per day. Tests have shown that we are losing fiber mostly from the fine screening system. We will install a coarser screen (.079" perforations) in the 24P Screen (the 12P Screen already has an .079" perforated basket), and install 1/4" openings on the Gyro-Flote Screen next week. We will also plan to conduct a thorough check on system operation just as soon as the larger perforations are put in service.

2. Hauling Cost

   With open top containers (from Cohen Brothers) holding 30 to 40 yards and using 15 to 20 pickups per month, our hauling cost to Logan-Long would be $700 to $1000 per month. This is based on a production rate of about 4 tons per day. Our potential gross earnings on a 4-ton per day basis are about $2000.

   During the week we tried a 30-yard compactor with the hope that we might compact stock sufficiently to reduce our transportation cost to a reasonable level.

   Although we did not completely fill the compactor, it is evident that this would not substantially reduce our hauling cost.

   We feel that our best bet is to use a dump truck and haul the material to Logan-Long with our own people.

3. Dilute Rejects

   We hope to solve the dilute reject problem early next week by putting the Gyro-Flote Screen in service on our rejects. If the screen operates properly, we should be able to thicken our rejects to much higher level. This is necessary for good Hydradenser operation in the Hydrasposal System.

Fibreclaim System - continued

4. Nonmagnetic Metal Recovery

The nonmagnetic residue from the Hydrapulper should be of greater value than the magnetic metal providing a way is found to separate aluminum, copper, brass, etc. We have passed the nonmagnetic residue back through the Hydrapulper. This reduced its volume and weight by one half.

Wilbur Cohen has informed me that Huron Valley Steel in Detroit may be interested in this product. I plan to call Mr. Gib Sequin, Telephone No. 313/941-3400, to discuss possibilities of selling him our nonmagnetic residue.

PGM/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of July 26 to August 1, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF JULY 26 TO AUGUST 1, 1971

Refuse Processed	220 Tons (44 T/D on a 5-day/week basis)
Fiber Collected and Weighed	8.9 Tons (AD)
Fiber Sold	8.9 Tons (AD)
Fiber Recovered OD Basis	3.7% BOR*
Magnetic Metal Recovered OD Basis	7.8% BOR
Nonmagnetic Metal OD Basis	3.9% BOR
Cyclone Rejects	11.6% BOR
Water	25% BOR (estimated)
Organic Material	48.0% BOR
Pulper Operating Time	34 Hours
Reactor Operating Time	41 Hours
Fibreclaim System Operating Time	25 Hours

*BOR = Based on Refuse

PGM/erb
August 5, 1971

W. Herbert **From** Paul G. Marsh **Date** July 27, 1971

Copies To R. F. Vokes (2), E. T. Blakley, D. H. Kohlhepp

Subject Franklin Solid Waste Plant Progress: Week of July 19 to July 24, 1971

File Ref. Franklin Plant Operation/ Status (Progress Report)

c.r. Franklin, Ohio Plant
c.r. Logan-Long Co./Franklin
c.r. Cohen Brothers Inc.
c.r. Suburban Sanitary Service

Attached is the production summary for the week of July 19 to July 24, 1971.

The production rate of the Fibreclaim System is about 13.5 tons per day (AD basis).

The VR Classifiner bottleneck has been overcome by increasing rotor speed from 760 RPM up to 1060 RPM. We are consistently operating the 12P Screen as a reject screen using .079 holes. We have ordered a 1/4" perforated plate for the Gyro-Flote Screen so that we can further improve yield.

We have delivered the first fiber to Logan-Long. This was processed on July 24 by feeding it into their Hydrapulper with no apparent problems. The bulk of our material has presented a problem in shipping. A 30-yard container will hold only 4 tons. On July 23, I met with Mr. Wilbur Cohen and made plans to try a compactor container. Using a compactor, a 30-yard container should hold 9 - 10 tons.

I had a visit from Mr. Brooks of Suburban Sanitary Service. He is interested in our non-magnetic junker rejects. I gave him a 5-gallon sample of this material and asked him to make us an offer. Meanwhile Wilbur Cohen has looked at this material and is interested.

Paul G. Marsh/eb

PGM/erb

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Enc.
Status - Hydrasposal/Fibreclaim
Week of July 19 to July 24, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF JULY 19 TO JULY 24, 1971

Refuse Processed	213 Tons (43 T/D on a 5-day/week basis)
Fiber Recovered	12.5 Tons per Day (24-hour)
Fiber Collected and Weighed	8.7 Tons (AD)
Fiber Sold	4.5 Tons (AD)
Magnetic Metal Recovered OD Basis	7.8% BOR*
Non-Magnetic Metal OD Basis	3.6% BOR
Cyclone Rejects	12.4% BOR
Water	25% BOR (estimated)
Organic Material	51.2% BOR
Pulper Operating Time	35 Hours
Reactor Operating Time	38 Hours
Fibreclaim System Operating Time	16.2 Hours

* BOR = Based on Refuse

Paul G.

PGM/crb
July 27, 1971

REPORT OF MEETING WITH VENDOR

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Company:	Dorr-Oliver Incorporated
Meeting Place:	Middletown, Ohio
Date:	July 13, 1971
Subject:	Franklin Solid Waste Plant, Status of F/S Disposal System
Report By:	Dean H. Kohlhepp

Dorr-Oliver Personnel Present:

R. A. Martimucci,	Supervising Project Manager
H. W. Richards,	Director Process Engineering
David Kellerher,	Process Engineer
E. L. Wilson,	Construction Supervisor

Black Clawson Personnel:

P. G. Marsh
E. T. Blakley
W. P. Sibert
D. H. Kohlhepp

Copies of Report to:

R. F. Vokes
W. Herbert
P. G. Marsh
W. P. Sibert
E. T. Blakley

Meeting was held at the request of Martimucci to discuss status of the F/S Disposal System at Franklin.

The writer advised that with certain reservations, the Dorr-Oliver System has and is performing satisfactorily to date. The reservations cited are:

1) ROTARY VALVE - PNEUMATIC FEEDER SYSTEM EQ. #119

Rotary Valve for the Feeder System supplied for Dorr-Oliver (D-O) by Allen-Sherman-Hoff (A-S-H) must be replaced by one that will perform satisfactorily without plugging. The selection of this type and size valve was made, according to Martimucci, on the basis of samples and information supplied by Black Clawson, and especially a bulk density figure of 28#/cu.ft. (wet) vs 16#/cu.ft. as produced currently.

However, D-O Specs. dated May 6, 1970 do not refer to bulk densities but include only feed characteristics as 132#/min 40% solids, 85% volatile solids 7000 Btu/# of total solids. 8800 Btu/# volatile solids.

1) ROTARY VALVE - PNEUMATIC FEEDER SYSTEM EQ. 119 - continued -

The original A-S-H Valve began plugging at feed rates as low as 60#/min, and went chronic at 80 - 90#/min at which rate the Btu rating of 1,000,000 Btu/min for the Reactor was reached.

We requested D-O along with A-S-H review our requirements firsthand at Franklin and furnish the proper valve. This to be done as soon as possible as the substitute Flo-Tronis Valve will not last.

ACTION NOTE: P. Marsh to check on original feed data supplied to D-O. We are to supply new data - bulk density wet and dry, lump characteristics, sizes, etc.

2) REACTOR COOLING RATE - EQ. #130

D-O was advised temperature fall-off on shutdown is averaging about 15°F/hour instead of the 10°F/hour specified. This results in excessive drop of 600°F over a 40-hour weekend cutoff. It is necessary to bring an operator in Sunday to step temperature up with auxiliary fuel burners.

D-O suggested prior to shutdown increase bed temperature to maximum, approx. 1600°F. or until Scrubber alarm is touched off (limit 200°F.). They also suggested bed temperature reading would be low unless bed turned over first. (This is our standard procedure.)

3) MAKEUP SAND - REACTOR - EQ. #130

D-O provision for adding makeup sand to the Reactor through a funnel on the front platform is clumsy and impractical. We requested recommendations on a more satisfactory method. Either by continuous feed through the Pneumatic Feeder System or a separate Pneumatic System. To date, after four weeks plus operation, no sand loss or pressure differential drop has been indicated.

4) REACTOR CONTROL PANEL

Temporary Poly-Flo Tubing to freeboard pressure. Original copper line to be rechecked and put back into service - by Hughes-Bechtol.

Dorr-Oliver should finalize their Operating Instructions and Process Data in the form of a report to Black Clawson. It was their opinion that the F/S Disposal System is now ready for full-scale marketing for solid waste applications.

SERVICE TIMES - FIELD ENGINEER ERECTION AND START-UP

Dorr-Oliver proposal includes 70 man-days for field erection supervision and 70 man-days check-out service, start-up and operating training. A total of 140 man-days allowance.

D-O accumulated time records for Messrs. Wilson and Kellerher were considerably higher than record of this reporter. After eliminating travel time but allowing for work on Saturday and Sunday, we arrived at a total of 147 man-days or 7 days for which Black Clawson would be charged.

FINANCIAL Dorr-Oliver Invoice Dated March 3, 1971 ($336,350.00 or Approximately 90% of Contract Price)

Mr. Martimucci requested information on the status of payments. Paul Sibert met with us briefly for this purpose. A schedule of payments is to be submitted to D-O for approval.

Martimucci wants to invoice now for the balance of 10% due.

ACTION **SIBERT** - This should be done as soon as possible. Martimucci clearly stated to me that unless an acceptable settlement schedule is worked out, D-O would be reluctant to spend more money at this time on such things as the Rotary Valve problem.

BACKCHARGES

1) **Heat for Reactor During Refractory Lining**

Gustav Hirsch submitted a bill for $900.00 plus for heaters and electricity supplied during construction period. I have advised him at the time the bill was submitted and today that this was not to Black Clawson's account. **ACTION:** A. M. KINNEY

BACKCHARGES - continued -

2) **Fluidizing Air Blower Motor**

D-O backcharge incurred from GE when motor specs were changed from 400 HP, 2300 volt to 500 HP, 460 volt. Should be to D-O account. Black Clawson did not initiate this change. Ref: DHK's letter to Dorr-Oliver dated October 26, 1970.

3) 90 man-days extra engineering incurred by Dorr-Oliver in reorienting Scrubber-Separator configuration to agree with AMK Bed Drawings. - Not Black Clawson's responsibility per DHK's letter to Dorr-Oliver dated October 26, 1970.

DHK/erb
July 15, 1971

To W. Herbert **From** Paul G. Marsh **Date** July 19, 1971

Copies To R. F. Vokes (2), E. T. Blakley, D. H. Kohlhepp

Subject Franklin Solid Waste Plant
Progress:
Week of July 12 to July 17, 1971

File Ref. Franklin Plant Operation/
Status (Progress Report)

c.r. Franklin, Ohio Plant
c.r. Logan-Long Co./Franklin

The production summary for the Franklin Plant for the week of July 12 to July 17 is attached.

We worked on the Fibreclaim System all week. We are producing fiber at the rate of 2 - 3 tons/day, but took repeated shutdowns to improve performance. The feed to the VR Classifiner is limited and is presently the bottleneck.

On July 15, we put in a container to catch fiber for transport to Logan-Long. Don Brown, Mill Manager of Logan-Long, visited the Plant on July 16. He liked the looks of our fiber and will run it when we deliver a full container. (About Thursday, July 22).

Paul G. Marsh/e

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Enc.
Status - Hydrasposal/Fibreclaim
Week of July 12 to July 17, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF JULY 12 TO JULY 17, 1971

Refuse Processed	230 Tons (46 T/D on a 5-day/week basis)
Fiber Collected	2000 - 4000 lbs.*
Magnetic Metal Recovered OD Basis	7.9% BOR **
Non-Magnetic Metal OD Basis	3.8% BOR
Cyclone Rejects	11.1% BOR
Water	25% BOR (estimated)
Organic Material	51.2% BOR
Pulper Operating Time	36 Hours
Reactor Operating Time	40 Hours

* Estimated (Fiber cannot be weighed until container is full.)

** BOR = Based on Refuse

PGM/e

PGM/erb
July 19, 1971

W. Herbert **From** Paul G. Marsh **Date** July 13, 1971

Copies To R. F. Vokes, D. H. Kohlhepp, E. T. Blakley

Subject Franklin Solid Waste Plant Progress: Week of July 6 to July 10, 1971

File Ref. Franklin Plant Operation/ Status (Progress Report)

c.r. Franklin, Ohio Plant

The status summary for the week of July 6 to July 10 is attached. Note that the amount of refuse processed was down by about 10 tons over the preceding week. However, in general, results are a duplication of previous weeks.

On July 10, we installed the 7/8" perforated bedplate. The 3/4" perforated bedplate was badly worn.

The Fibreclaim System has still not operated up to design. The bottleneck was getting stock to the 24P. The screen supply pump, an AN Pump, is misapplied. The pump plugged with strings. Corrective measures taken were to cut out every other vane in the impeller on the pump and to close up the gaps in the VR Classifiner bedplate to minimize the passage of strings.

On July 8, we produced 1000 lbs. of fiber. This was processed further in the Middletown Pilot Plant on July 9. In general, operation in the Pilot Plant was encouraging. Problems with low yield and low digester pressure were encountered.

Several samples were sent out during the week. We sent glass samples to:

Colorado School of Mines	100 lbs.
Ore Sorters Limited	100 lbs.
Professor Ward R. Malisch University of Missouri/Rolla	55-gallon drum

Analysis of the glass was typically:

-8 Mesh	30%
-3/8" + 1/8	63%
+3/8"	7%

We are being plagued with numerous problems of a serious nature (see attached list). We should meet soon to decide on courses of action. Items 5, 6, 9, 17, and 18 require fast action.

Paul G Marsh/e

PGM/erb

Enc. Status - HYDRASPOSAL/FIBRECLAIM - Week of July 6 to July 10,1971
List - Franklin Solid Waste Plant Problems

STATUS - HYDRASPOSAL/FIBRECLAIM

WEEK OF JULY 6 TO JULY 10, 1971

Refuse Processed	217 Tons (43 T/D on a 5-day/week basis)
Magnetic Metal Recovered OD Basis	8.1% BOR*
Non-Magnetic Metal OD Basis	5.0% BOR
Cyclone Rejects	10.5% BOR
Water	25% BOR (estimated)
Organic Material	51.4% BOR
Pulper Operating Time	34 Hours
Reactor Operating Time	37 Hours

*BOR = Based on Refuse

PGM/erb
July 13, 1971

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FRANKLIN SOLID WASTE PLANT PROBLEMS

1. GROUNDS

The weeds appear to be growing better than the grass. N. T. Neff says the grounds people are not finished. My recommendations: Get Neff to have landscapers return to finish work.

2. APPROACH APRON TO TIPPING FLOOR

We use this area for dumping every day. On windy days refuse will blow.

Recommendations:

a. Erect a Cyclone fence each side of the apron to catch blowing papers.

b. Extend covered area. The cost of this per Tom Neff will be about $50,000.

Another problem is that this area is paved with asphalt. Concrete would have been better.

3. TIPPING FLOOR AND SCALE HOUSE

A. Dust level is high in this area. Dust is getting in scales, cash register, and calculator in scale house.

Recommendation:

Small air conditioner for scale house.

B. Accumulation of unpulpable debris.

Solution:

Borrow truck from City of Franklin to truck material to landfill. - Done July 12.

4. FEED CONVEYOR

Excessive dirt including pieces up to 12" square is carried over and drops into the conveyor pit. Pit is difficult to clean.

Recommendation:

Catch material in a bin - shorten bottom of conveyor.

5. PULPER

A. Excessive Wear of Tackle.

Peter Siefert will report on wear and make recommendations. PGM and J. Shafer believe wear on bedplate is excessive beyond that which can be attributed to lack of wear strips which were lost soon after starting operations.

Recommendation:

Consider cast bedplate out of harder material or hard overlay.

B. Dust and Splash

Pulper vicinity is excessively dirty due to dust and splashing. This is a very serious problem. Dust and dirt are damaging our air compressors, splashing visitors, and wasting manpower on cleanup.

Recommendations:

Install vented hood over pulper. Consider extending hood back over feed conveyor to the fire wall to replace fire door.

C. Low Stock Consistency

Extracted stock consistency was too low with 3/4" holes and four (4) vanes on the rotor.

Recommendations:

a. Go to larger holes - done July 10.

b. Go to 3-vane rotor so that pulper can be run at higher consistency without overloading the motor.

6. JUNKER

The Junk Remover must be cleaned out daily in order to keep the chain from jumping off the sprocket. Because of small opening on one side, this is time-consuming.

Recommendations:

Lower large door and equip with quick opening fasteners. Move small door to opposite side.

7. PIPING

Much of the piping in the plant vibrates excessively.

Recommendations:

Study and install further bracing.

8. LIQUID CYCLONE

A. Short Cycle Time

Liquid Cyclone cycle is less than two minutes. We predict high valve maintenance.

Recommendation:

Put larger reject chamber on cyclone - needs study.

B. Organic Dirt in Rejects and Loss of Heavies to Sewer

We need a better arrangement for elutriating cyclone rejects. Perhaps a drag conveyor in a larger tank.

9. INSUFFICIENT SOLID WASTE SUMP PUMP CAPACITY

The solid waste sump pump is undersized under present conditions.

Recommendations:

a. Increase pulper extraction stock consistency.

b. Speed up pump. Replace 15 HP motor with a 20 HP.

10. PAINTING

The painters have not finished painting the plant. Tom Neff should be reminded to get this done.

11. REACTOR

A. Call In for Heat-up

In order to keep temperature above the point where bed guns can be used (1150°F), we need to have a man in on Sunday.

11. REACTOR - (continued)

B. Scrubber Overflow

Water overflowing from Fluid Bed Scrubber makes excessive water which must be disposed of.

Solution:

Replace broken Rotometers for better control of flow to scrubber.

C. Sand Makeup

We need an approved plan from Dorr-Oliver for method of adding sand to the bed.

12. DOOR IN METAL SORTING AREA

Doors are small and have been hit by lift trucks repeatedly.

Recommendation:

Replace with larger door.

13. FIBRECLAIM SCREEN SUPPLY PUMP

The screen supply pump, an AN Pump, is misapplied. We have experienced plugging of the pump with strings.

Recommendations:

a. Cut out every other vane in the impeller - done July 9.

b. Close up spaces in VR Classifiner which allow material to pass - done July 12.

14. EXCESSIVE POWER ON VR CLASSIFINER SUPPLY PUMP

The VR Classifiner Supply Pump draws excessive power when the valve is opened any appreciable distance.

Recommendation:

Slow pump so valve can be opened wider - done July 12.

15. DIFFICULTIES IN SECONDARY SCREENING

The 12P screen is difficult to control - inlet pressure may be too low.

Recommendation:

Temporarily bypass rejects from 24 P to Gyro-Flote - done July 12.

Also study 12P situation.

16. DISPOSAL OF UNPULPABLES

A. Tires

MCD does not want tires in landfill.

Recommendation:

Send tires to Franklin's old landfill.

B. Wood

MCD does not want to bury wood. Wes Flower will check on burning. Meanwhile we will send to Franklin's old landfill.

17. VEHICLES

We are being plagued with flat tires on both the end loader and the fork lift.

Recommendation:

Go to solid tires.

18. WHITE WATER CHEST AGITATOR

Internal bearing is gone on the white water chest agitator.

Recommendation:

Replace with a different design bearing. In progress - J. D. Shafer.

PGM/erb
July 13, 1971

To W. Herbert **From** Paul G. Marsh **Date** July 9, 1971

Copies To R. F. Vokes

Subject Franklin Plant Operation - Week of June 28 to July 3, 1971

File Ref. Franklin Plant Operation/Status

c.r. Franklin, Ohio Plant

During the week of July 3, most of the refuse was processed directly in the Hydrasposal System. However, during the week we worked on the start-up of the Fibreclaim System.

The first fiber was produced in the Fibreclaim System on July 1, 1971. This was a very small quantity due to problems with pump power and plugging screens. After making changes on July 2, we again ran the system on July 3. Screen plugging problems did not appear to be a serious problem. However, more work has to be done on pumps.

In the Hydrasposal area, we operated with one set of broken hammers all week. On Saturday, July 3, we cleaned out the pulper and examined the tackle. We found that the stators were in excellent condition. Other elements of the pulper grinding tackle appeared to be too soft. We have proceeded to order harder materials and to make other necessary changes. My impression is that our problems in this area are not serious.

I have attached a sheet containing operating statistics for the week.

RECEIVED
JUL 9 1971
BLACK CLAWSON
SHARTLE DIV.
ENGR.

PGM/erb

Enc.

Status - Hydrasposal/Fibreclaim
Week of June 28 to July 3, 1971

STATUS - HYDRASPOSAL/FIBRECLAIM
WEEK OF JUNE 28 TO JULY 3, 1971

Refuse Processed	230 Tons (46 T/D on a 5-day/week basis)
Fiber Recovered	200 Pounds
Magnetic Metal Recovered OD Basis	8.2% BOR*
Non-Magnetic Metal OD Basis	4.8% BOR
Cyclone Rejects	11.4% BOR
Water	25% BOR (estimated)
Organic Material	51% BOR
Pulper Operating Time	44.6 Hours
Reactor Operating Time	39.5 Hours

* BOR = Based on Refuse

PGM/erb
July 9, 1971

To FILES **From** R. F. Vokes **Date** June 1, 1971

Copies To W. Herbert, P. G. Marsh, D. H. Kohlhepp

Subject Franklin Plant Start-up -- Status Tuesday, June 1, 1971 **File Ref.** Solid Waste Processing/ Franklin Plant

Fluid Bed Reactor: Sand -- first load dried, second load due June 1 -- put in June 2, last load -- complete drying and curing for acceptance of garbage June 7.

Fibreclaim Equipment Hydraulic/Mechanical Testing: Because of pipe fitters being assigned 100% to Hydrasposal -- delay of one week for Fibreclaim initial equipment testing with Fibreclaim system full operation schedule approximately end of June.

INSTRUMENT CHECK -- Hydrasposal -- schedule completion June 2.

Operation modifications -- -- complete.

Minimum charge -- individual dumping -- --? ? -- follow-up with WH.

Landfill Problem: Possibly the nonprocessables, i.e., furniture -- stoves, refrigerators, etc.; tree stumps, etc., may exceed the capacity of the on-site landfill. Solutions:

1) Operate initially as planned.
2) Operate ultimately using existing city sanitary landfill with conveyance via collectors.
3) Sort-outs -- excessive -- handled via end loaders on-site to collectors empty trucks en route to city landfill.

Special Problems -- Waste: Example -- Franklin Felting Company -- jute waste. Solution:

. Propose acceptance in plastic bags or equivalent.

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NOTICE

FRANKLIN PLANT START-UP

On Saturday, May 22, paper stock was fed through the Hydrasposal System at Franklin, up to the fluid bed burner. Only minor problems were encountered, and these have now been corrected.

The fluid bed burner was fired up on Wednesday, May 26 for drying out. The drying out, curing and loading with sand will occupy the balance of this week and most of next week.

Next week we plan to run some garbage through the system, up to the burner.

On Monday, June 7, we plan to run garbage through to the burner, and to start fiber recovery the following week.

William Herbert
Solid Waste Systems Department Manager

sja
May 27, 1971

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THE BLACK CLAWSON COMPANY
Shartle/Pandia Divisions
Middletown, Ohio

FRANKLIN STATUS REPORT

The Franklin plant went into full production on Monday, June 21. After a week of satisfactory operation, the Franklin landfill was shut down on the 28th, and we are now processing all of the waste delivered.

The plant is operating at design rate - 50 tons per eight (8) hours.

The fiber recovery plant will start this week.

William Herbert
Solid Waste Systems Department Manager

6/30/71

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FOR MORE INFORMATION ABOUT THE FRANKLIN PLANT

Herbert, W. Solid waste recycling at Franklin, Ohio. In Proceedings; Third Mineral Waste Utilization Symposium, Chicago, Mar. 14-16, 1972. U.S. Bureau of Mines and Illinois Institute of Technology Research Institute.

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Neff, N.T. Solid waste and fiber recovery demonstration plant for the city of Franklin, Ohio; an interim report. Environmental Protection Publication SW-47d.i. U.S. Environmental Protection Agency, 1972. 83 p. (Distributed by National Technical Information Service, Springfield, Va., as PB-213 646.)

Neff, N.T. Solid waste and fiber recovery demonstration plant for the city of Franklin, Ohio; final report. v. 1, 2. U.S. Environmental Protection Agency, 1974. (In press; to be distributed by National Technical Information Service, Springfield, Va.)